Devoted to
TEXTILE
CHEMISTRY
BLEACHING
DYEING
PRINTING
FINISHING

JUNE 2, 1947
VOLUME 36, No. 11

AMERICAN DYESTUFF REPORTER

SAYREVILLE PUBLIC LIBRARY
JUN 5

At long last

The patience and loyalty of the many users of *Solophenyl Fast Blue Green B L* are being rewarded by an increase in production to permit more general usage of the daddy of all Solophenyl* colors.

This increase is opportune — coming at a time when a critical consumer market for textiles is making itself felt. Those mills which, because of supply conditions, have postponed standardizing on *Solophenyl Fast Blue Green BL*† for their faster cottons, rayons or mixed fibre fabrics will find the product readily available.

Mills having had no experience with Solophenyl Fast Blue Green B L will find this fastest-to-light of all Direct Greens a most desirable color in the competitive market now facing us.

Solophenyl Fast Blue Green B L set the standard for all Solophenyl colors. Only the fastest-to-light Direct colors are permitted to bear the name Solophenyl.

*Registered U. S. Patent Office
†Patented

GEIGY COMPANY, INC.
89-91 BARCLAY STREET NEW YORK—NEW YORK
Boston · Providence
Philadelphia · Charlotte
Chicago · Portland, Ore.
Toronto

Geigy
Dyestuff Makers Since 1859

In Great Britain
The Geigy Co., Ltd.
National Buildings
Parsonage, Manchester

OFFICIAL PUBLICATION
of the
PROCEEDINGS
AMERICAN ASSOCIATION
OF TEXTILE CHEMISTS
AND COLORISTS

For Superior

ANILINE BLACKS

1. GOOD PRINTING PROPERTIES
2. MINIMUM TENDERING OF THE FABRIC
3. DENSE, PLEASING TONE OF SHADE
4. EASE OF PREPARATION
5. FREEDOM FROM GRIT

Order... CYANAMID'S AERO* BRAND

YELLOW PRUSSIATE OF SODA

[Sodium Ferrocyanide $Na_4Fe(CN)_6 \cdot 10H_2O$]

YELLOW PRUSSIATE OF POTASH

[Potassium Ferrocyanide $K_4Fe(CN)_6 \cdot 3H_2O$]

PRUSSIATE ANILINE BLACKS are adaptable for printing cotton and rayon in a wide variety of styles in combination with vat dyes, rapid fasts and steam colors. This process is most effective in reducing tendering of the fabric, and minimizes the electrolytic effect on the doctor blade.

When Ordering Prussiates Specify AERO BRAND, your assurance of . . .

1. Uniformly high quality over 99% Yellow Prussiate of Soda or Yellow Prussiate of Potash.
2. Close chemical control from basic raw materials to the finished product.
3. Small crystalline form dissolves readily in hot or cold water.

•

For dependable supply . . . for authoritative technical service . . . call on Cyanamid.

Industrial AMERICAN
Chemicals CYANAMID
Division COMPANY
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

AMONG CYANAMID PRODUCTS FOR THE TEXTILE INDUSTRY ARE:

Penetrants, Softeners, Finishes, Sizing Compounds, DECERESOL** Wetting Agents, PARAMUL* 115 Water Repellent, and other specialties and Heavy Chemicals. For low-cost chemical equivalent of distilled H_2O . . . FILT-R-STIL** Demineralizing Units.

*Trade-mark **Reg. U. S. Pat. Off.

American Dyestuff Reporter, Vol. 36, No. 11, June 2, 1947. Published every other Monday. Copyright, 1947, by Howes Publishing Co., One Madison Ave., New York 10, N. Y. Domestic subscription, $5.00; Canadian, $6.00; Foreign $6.00. Entered as second-class matter, Nov. 6, 1919, at the New York, N. Y., Post Office, under the act of March 3, 1879.

Ciba DYESTUFF GLIMPSES

In all science there is nothing more fascinating than the production of color from the sticky black substance we call coal tar. Many and various, however, are the steps that lead to the present day dyestuffs which help create our modern way of life by making clothing more cheerful, women more beautiful and life itself more enjoyable.

First comes the careful distillation of the coal tar to produce products like benzene, toluene and naphthalene. These are basic materials but Ciba has always recognized the fact that only the purest parent substances can give birth to dyestuffs of Ciba's standard. A good start is essential! As a result, these products and others developed by further processing are tested for purity again and again — as for instance, by determining the melting point.

For this purpose a little glass flask is necessary, fitted with a thermometer and a stirring appliance and heated by a small gas jet. The tiny glass tubes containing the substance under test are hung in the flask, dipping into the sulphuric acid or molten paraffin wax with which it is filled.

Let us suppose that a sample of naphthalene is being examined. If it melts at 80° C. exactly, the chemist is satisfied, for the naphthalene is pure. Should it melt at 77° C., however, it is impure and must be purified further. Every pure substance has a definite, known melting point. While naphthalene melts at 80° C., anthracene, for example, must not melt below 217° C.

DYESTUFFS • CHEMICALS • INTERMEDIATES

CIBA COMPANY, INC.

Greenwich & Morton Sts.

NEW YORK

BOSTON · CHICAGO · MONTREAL · CHARLOTTE
PROVIDENCE · SAN FRANCISCO · PHILADELPHIA

VAT DYES OF THE DOW CHEMICAL COMPANY

NEOLANS ON WOOL MEAN QUALITY RESULTS
with MINIMUM EFFORT

When a lady tells in glowing terms of the lovely fabric that meant so much in her choice of the perfect evening gown — a fabric processor knows instantly exactly what she means! For he knows, as she does, how important a part a fine, perfectly processed fabric plays in her ultimate picture of beauty.

That explains why so many of America's leading mills, converters, finishers and dyers have turned to Colgate-Palmolive-Peet for high-quality wetting, fulling, scouring and dispersing agents.

Remember, there is a C.P.P. soap or synthetic detergent for every type of fabric—for every processing problem. Ask your local Colgate-Palmolive-Peet representative for details. Or, write to Industrial Department, Colgate-Palmolive-Peet Company.

Colgate-Palmolive-Peet Company

JERSEY CITY 2, N. J. • ATLANTA 3, GA. • CHICAGO 11, ILL. • KANSAS CITY 3, KANS. • BERKELEY 2, CALIF.

igepon

first and foremost
synthetic detergent

- eliminates hard water problems
- shortens production time • cuts costs
- assures highest quality in fabrics

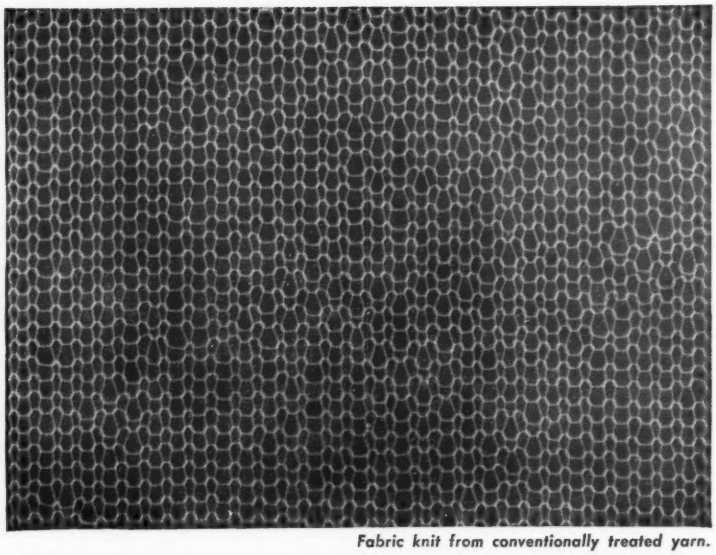
may we advise you how igepon can solve your mill problem

GENERAL DYESTUFF CORPORATION

435 HUDSON STREET, NEW YORK 14, NEW YORK

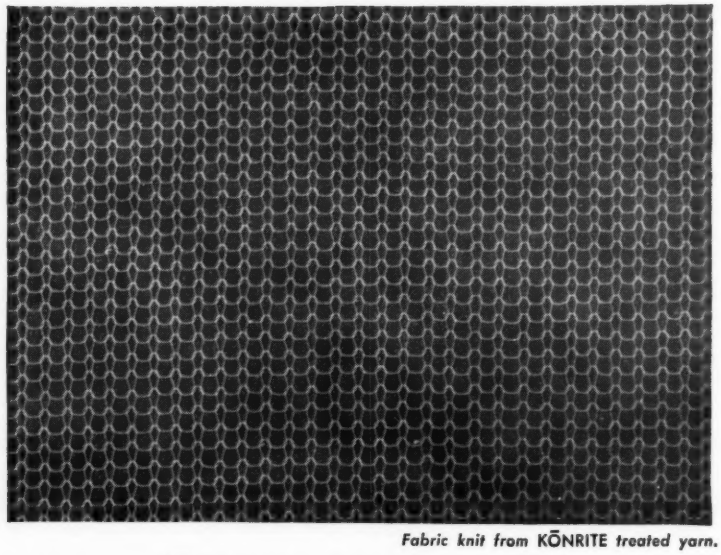
BOSTON · PHILADELPHIA · CHARLOTTE · PROVIDENCE · CHICAGO · SAN FRANCISCO

Is your stitch like this



Fabric knit from conventionally treated yarn.

or like this



Fabric knit from KŌNRITE *treated yarn.*

For the treatment of yarns for truly fine hosiery, Nopco presents KŌNRITE, a new and unique nylon coning oil. In Coning, Knitting, Seaming, KŌNRITE offers you:

OUTSTANDING RESULTS...

- ... ***in Coning*** — produces cones of proper density, practically eliminating overlaps, crossovers and underwinds
- ... increases cone production
- ... ***in Knitting*** — minimizes stripping of size — reduces pressoffs
- ... gives clear perfect stitch formation
- ... ***in Seaming*** — reduces roll... its strong defense against curling is a major factor in greatly increased hosiery production

OUTSTANDING ADVANTAGES...

- ... Controlled viscosity, assuring even distribution of oil on yarn
- ... New stitches firmly cemented through rapid drying action
- ... Prevention of softening in lagged yarn and fabric

For full information on KŌNRITE, *please write today.*

NOPCO CHEMICAL COMPANY, Harrison, N. J.

Formerly National Oil Products Company

BRANCHES: BOSTON • CHICAGO • CEDARTOWN, GA. • RICHMOND, CALIF.

EVOLVED THROUGH RESEARCH NOPCO

Kōnrite The Outstanding Nylon Coning Oil

HEYDEN chemicals serve the nation's industries

TEXTILES

HEYDEN'S ***dependable chemicals*** **find wide application in textile processing, and in the manufacture of textile dyes.**

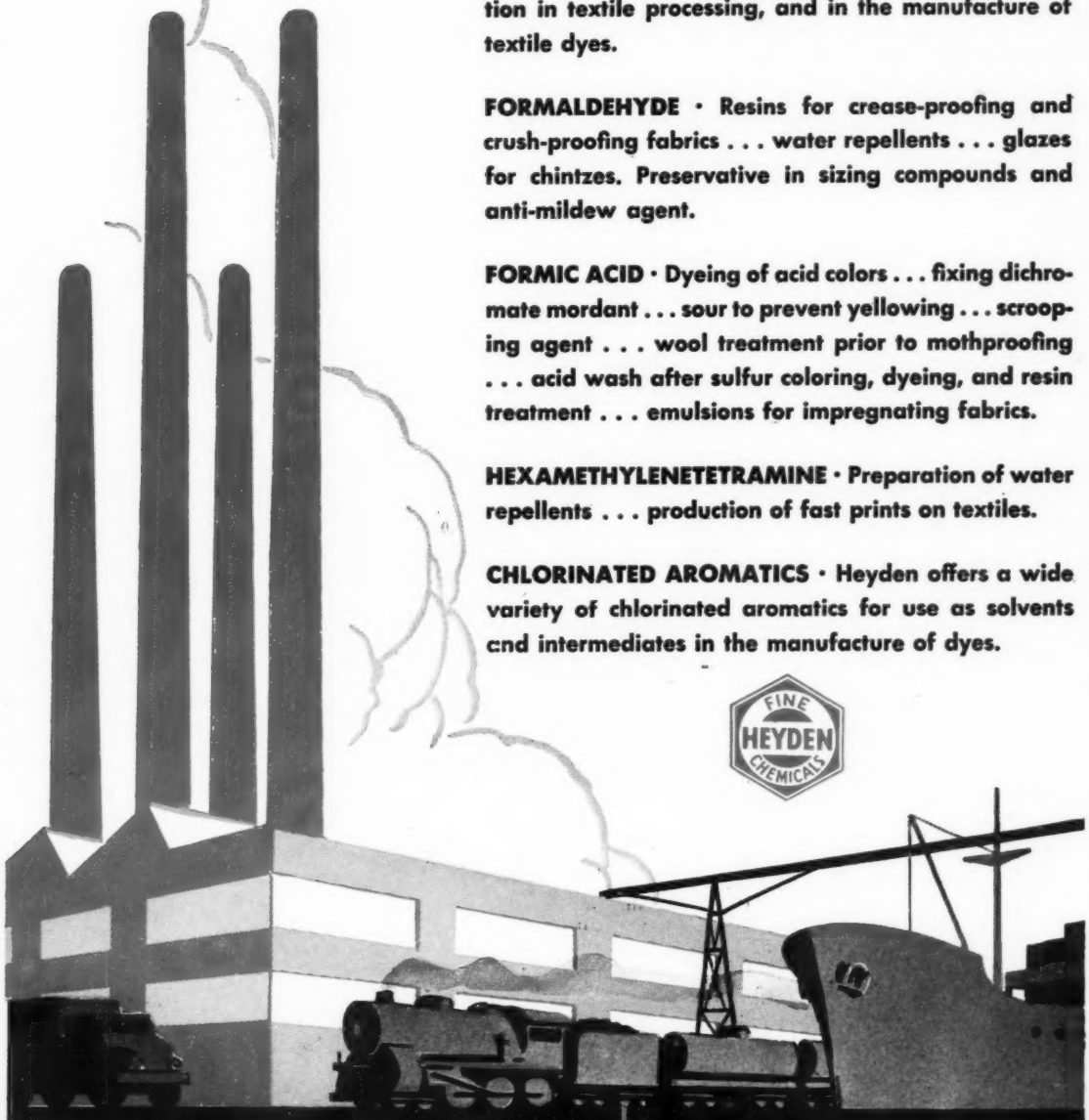
FORMALDEHYDE · **Resins for crease-proofing and crush-proofing fabrics . . . water repellents . . . glazes for chintzes. Preservative in sizing compounds and anti-mildew agent.**

FORMIC ACID · **Dyeing of acid colors . . . fixing dichromate mordant . . . sour to prevent yellowing . . . scrooping agent . . . wool treatment prior to mothproofing . . . acid wash after sulfur coloring, dyeing, and resin treatment . . . emulsions for impregnating fabrics.**

HEXAMETHYLENETETRAMINE · **Preparation of water repellents . . . production of fast prints on textiles.**

CHLORINATED AROMATICS · **Heyden offers a wide variety of chlorinated aromatics for use as solvents and intermediates in the manufacture of dyes.**

FINE HEYDEN CHEMICALS



HEYDEN CHEMICAL CORPORATION
393 SEVENTH AVENUE, NEW YORK 1, N. Y.
CHICAGO OFFICE, 20 North Wacker Drive
PHILADELPHIA OFFICE, 1700 Walnut Street

Benzaldehyde • Benzoates • Benzoic Acid • Benzyl Chloride
Bromides • Chlorinated Aromatics • Medicinal Creosotes
Formates • Formaldehyde • Formic Acid • Glycerophosphates • Medicinal Guaiacols • Hexamethylenetetramine
M.D.A. • Paraformaldehyde • Parahydroxybenzoates
Penicillin • Pentaerythritols • Salicylates

Hooker Chemicals for Textiles

If you are interested in bleaching, dyeing and finishing textiles, Hooker can supply many of the chemicals you need. Your work will be made easier, your operations will run smoothly and your product will be of uniform high quality when you use Hooker Chemicals.

Careful control combined with specially developed manufacturing techniques of Hooker Chemicals assures you of uniformly high quality in every shipment to your plant.

Listed below are some of the Hooker Chemicals that are serving the dye and textile industries. These and many others are listed in the Hooker General Products List, Bulletin 100. Technical data sheets are also available describing each product more completely. Just write "Bulletin 100" and the names of any products on which you would like more information on your letterhead and sign your name. The literature you want will be on its way by return mail.

PRODUCT *Chemical Formula; Molecular Weight*	HOOKER SPECIFICATIONS	SUGGESTED USES
Aluminum Chloride Anhydrous $AlCl_3$; 133.3	Aluminum Chloride ..... 98.5% Min. Iron ..... 0.05% Max. Non-sublimables in air at 950°C. 1.5% Max.	Catalyst in synthesis of dyestuffs and intermediates.
Benzoic Acid-USP and Tech. C_6H_5COOH; 122.1	Benzoic Acid ..... 99.3% Min. Water ..... 0.2% Max.	Manufacture of dyes Mordant.
CP—70 $C_{24}H_{29}Cl_{21}$; 1063	A chlorinated paraffin resin in powder form. Soluble in aromatic solvents, difficultly soluble in mineral spirits. Chlorine ..... 71 ± 2% Iron ..... 0.01% Max. Softening range ..... 90° to 100°C.	Treating textiles to make water, fire and mildew-proof.
Lauryl Pyridinium Chloride C_5H_5N ($C_{12\text{-}6}H_{26\text{-}2}$)Cl; 292.0	Mottled tan semi-solid. Solubility in water is 60 gms. per 100 gms. of water. Alkyl Pyridinium Chloride (Calc. as C_{12}).....85.0% Min.	Cationic detergent. Wetting and cleaning agent for textile fibers. As a leveling agent and color modifier in dyeing.
Orthodichlorbenzene $C_6H_4Cl_2$; 147	Clear, colorless liquid. Freezing Point..... −10° to −22°C Boiling Range.....6° including 179°C	Manufacture of pyrocatechin, dye intermediates, other synthetic organic chemicals. Degreasing wool.
Sodium Sulfhydrate NaSH; 56.1	NaSH ..... 70 to 72% Fe ..... 5 ppm Max. Na_2S ..... 0.25 to 2.5% NaCl ..... 0.4 to 0.8% Na_2SO_3, $NaHCO_3$ ..... 0.04 to 0.4% Cu, Ni, Cr, Mn, Pb..... 1 ppm Max. Water of crystallization..... 28 to 26%	Desulfurizing rayon; calco printing; in sulfur dye baths.
Sodium Sulfide Na_2S; 78.1	Na_2S ..... 60 to 62% Fe ..... 8 ppm Max. NaCl ..... 1.5% Max. Other Na Salts..... 2.0% Max. Cu, Ni, Cr, Mn, Pb..... 1 ppm Max. Water of crystallization..... 36.5 to 34.5%	Desulfurizing rayon; calico printing; in sulfur dye baths.

HOOKER ELECTROCHEMICAL COMPANY

HOOKER CHEMICALS

2 FORTY-SEVENTH ST., NIAGARA FALLS, N.Y.
New York, N.Y. Wilmington, Calif. Tacoma, Wash.

Caustic Soda **Chlorine** **Muriatic Acid** **Paradichlorbenzene** 2140

What a product!

All we ask you to do is to test this new detergent against any other on the market for stability in hard water, wetting-out dispersing, foaming, etc. and then you will see performance that will make you say "what a Product."

*REG. U. S. PAT. OFF.

Repcol is the most efficient product on the market — yet it costs you less.

REFINED PRODUCTS CORPORATION

Lyndhurst • New Jersey

• Manufacturers of PERMA-CIDE, the approved, outstanding, mildew-proofing agent

Southern Representative: DYER S. MOSS, 1301 Liberty Life Bldg., Charlotte, North Carolina

New England Representatives: E. L. LEGG, P. O. Box 597, Providence, R. I.
CLARENCE E. MOSS, 19 Wilson Ave., Rumford (16) R. I.

Canadian Selling Agents: Berkeley Products Canada, Ltd., 41 Hillcrest Avenue, St. Catharines, Ontario, Canada

Exporting Agent: Chem-Col Company, 82 Wall St., New York City

How to pin down 2 major sales points ...with RESLOOM

The performance qualities imparted by Monsanto's Resloom treatment . . . (1) crush-resistance, and (2) shrinkage control . . . are not mere claims but are real, definite, measurable.

For example, recent independent laboratory tests on a Resloom treated rayon dress fabric, showed the following:

Crush-resistance
Warp - 3.4
Fill - 3.1

Shrinkage after 3 washings
Warp - 7/10 of 1%
Fill - Zero

MONSANTO
CHEMICALS — PLASTICS

If YOU are interested in developing extra sales, today, it will pay you to investigate the Resloom way to add new qualities to your fabrics . . . rayon, wool, cotton or their blends. Write, wire or phone for a Monsanto textile specialist: MONSANTO CHEMICAL COMPANY, Textile Chemicals Department, 140 Federal Street, Boston 10, Mass.

Resloom: Reg. U. S. Pat. Off.

SERVING INDUSTRY . . . WHICH SERVES MANKIND

EASTMAN BLACK SN NEW

For Dyeing Cellulose Acetate Rayon

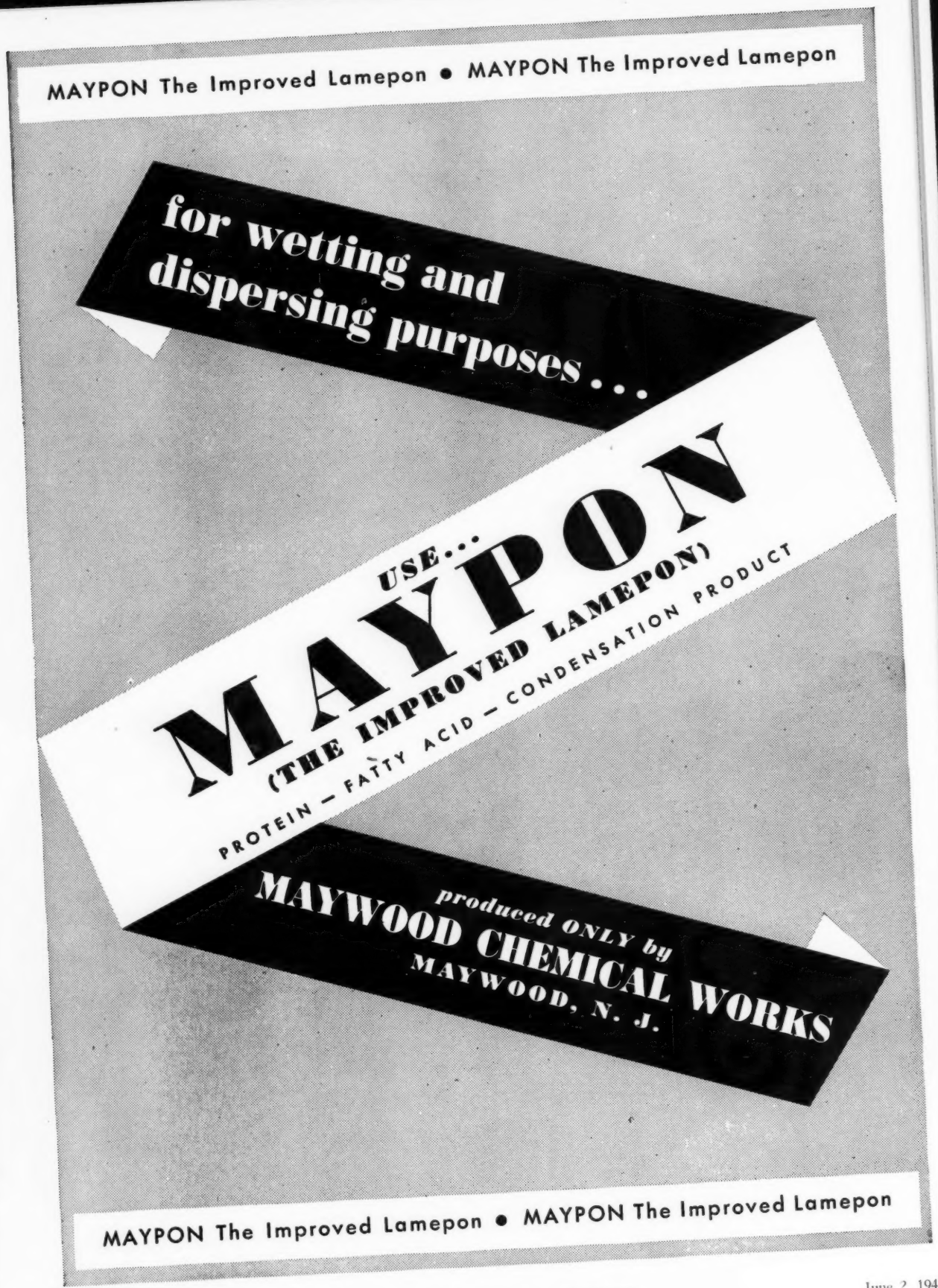
EASTMAN BLACK SN NEW is a highly refined soluble dye base. Diazotized and developed with beta-oxy-naphthoic acid, it dyes acetate rayon a dense neutral shade of black which retains its cast under both daylight and artificial light. It dyes nylon a slightly greener shade.

When heated with direct steam, Black SN New will not tar in a water medium. It is highly recommended for cross-dyeing, since it stains viscose rayon and cotton only slightly. At low temperatures, it penetrates and levels well with good exhaustion of the dyestuff. Blacks obtained by either jig or box method meet general commercial fastness requirements and offer exceptional resistance to sublimation and crocking.

Eastman Acetate Dyestuffs are available in a wide variety of useful colors especially developed for cellulose acetate rayon. Additional information concerning these dyestuffs can be obtained by writing to TENNESSEE EASTMAN CORPORATION (Subsidiary of Eastman Kodak Company), KINGSPORT, TENNESSEE.

Eastman

ACETATE DYESTUFFS


MAYPON The Improved Lamepon • MAYPON The Improved Lamepon
for wetting and dispersing purposes . . .
USE . . .
MAYPON
(THE IMPROVED LAMEPON)
PROTEIN — FATTY ACID — CONDENSATION PRODUCT
produced ONLY by
MAYWOOD CHEMICAL WORKS
MAYWOOD, N. J.
MAYPON The Improved Lamepon • MAYPON The Improved Lamepon

Ensemble by Norris-Conti

Dyes for coatings, suitings and custom shoe leathers, of course! But what of rouge, lipstick, face powder and nail enamel?

Whatever you wear, use or see it's likely to be colored with National Aniline dyes. For National alone makes every class of aniline dye and color...has had longer and broader application experience than any other American producer.

Specify National Aniline Technical Service and Dyes for assured results.

WHEREVER COLOR IS USED

National Aniline

DIVISION OF

ALLIED CHEMICAL & DYE CORPORATION

40 RECTOR STREET NEW YORK 6, N. Y.

BOSTON • PROVIDENCE • PHILADELPHIA • CHICAGO • SAN FRANCISCO • PORTLAND, ORE. GREENSBORO • CHARLOTTE • ATLANTA • NEW ORLEANS • CHATTANOOGA • TORONTO

DEVELOP YOUR COLORS WITH U. S. P. SOLVAY SODIUM NITRITE

The secret of quality azo dyes

SOLVAY
SODIUM
NITRITE
(U. S. P.)

To insure quality azo dyes, leading textile manufacturers specify U.S.P. grade SOLVAY Sodium Nitrite to develop their colors.

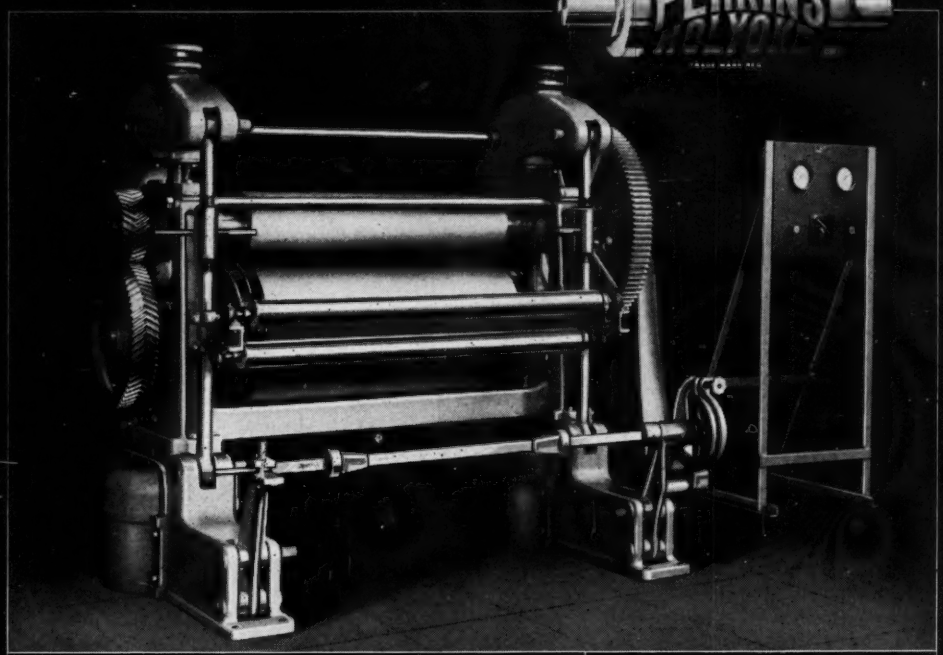
SOLVAY SALES CORPORATION

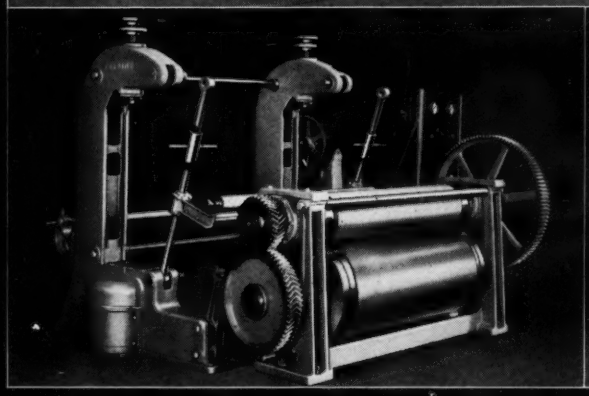
Alkalies and Chemical Products Manufactured by The Solvay Process Company

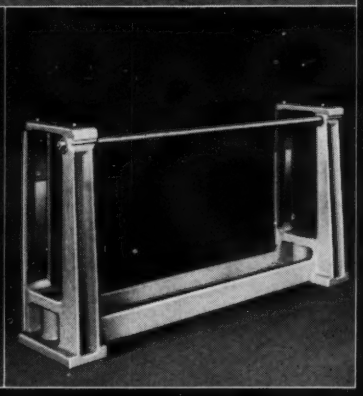
40 Rector Street **New York 6, N. Y.**

BRANCH SALES OFFICES:

Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit • Houston
New Orleans • New York • Philadelphia • Pittsburgh • St. Louis • Syracuse







EVERY PERKINS CALENDER is custom-made to meet local conditions, engineered for marked effectiveness, convenience, simplicity. For example, this two-roll 46" embossing calender shown with subframe and subframe removed. Foxboro air-pressure system. Rolls mounted in Timken anti-friction bearings. Helical roll connecting gears. There is no substitute for PERKINS quality.

B. F. PERKINS & SON, Inc.

HOLYOKE, MASS., U.S.A.

LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

Installing a Cascade Cooler?

For flexibility in capacity...

for high heat-transfer rate...

use the "KARBATE" Sectional Cascade Cooler

CASCADE coolers made of "Karbate" material—National Carbon Company's impervious graphite—are compact, light in weight, easy to install. They are constructed of standardized interchangeable parts. Capacity may be adjusted at any time to your processing needs, simply by adding or removing the standard sections.

"Karbate" impervious graphite coolers offer an exceptionally high rate of heat transfer. This property, coupled with unmatched resistance to chemical attack, makes "Karbate" sectional cascade coolers ideal for handling a greater number of corrosive chemicals than any other practical high heat-transfer material.

All parts for these coolers are carried in stock and both complete coolers and replacement items are available for immediate shipment. "Karbate" coolers come in five separate sizes, with inside pipe diameters of 1", 1½", 2", 3", and 4". If you have not yet received Catalog Section M-8807-A, the bulletin describing "Karbate" Sectional Cascade Coolers in detail, write to National Carbon Company, Inc., Dept. AD.

The term "Karbate" is a registered trade-mark of

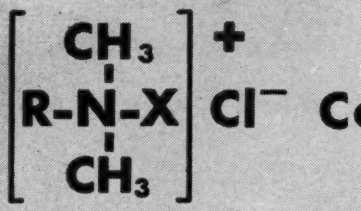
NATIONAL CARBON COMPANY, INC.

Unit of Union Carbide and Carbon Corporation

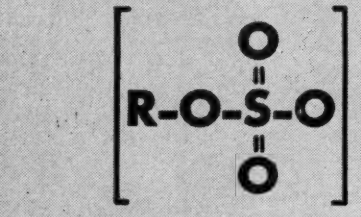
UCC

30 East 42nd Street, New York 17, N. Y.

Division Sales Offices: **Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco**



Cl⁻ Cationic? *Nope!*



Na⁺ Anionic? *Nope!*

NEUTRONYX 330 is NON-IONIC!

This polyalkyl ether condensate of fatty acids is a surface-active detergent providing unusual emulsifying and dispersing action. Its non-ionic character makes it completely stable against hardness, electrolytes and both anionic and cationic surface-active agents.

PROPERTIES

Exceptional dispersing properties combined with unusually high emulsifying action.

Excellent detergent effects due to solubilizing and emulsifying action on oils and greases, together with wetting action.

Prevents re-deposit of suspended soil.

Does not adsorb on textile fibers.

Good wetting action in warm water solutions.

It is a stable, oily, reddish brown liquid, readily miscible with water and alcohol, as well as with toluene, naphtha and Stoddard's Solvent in presence of 10% water.

USES

Auxiliary detergent in hard water conditions.

Dispersing and solubilizing agent for acetate colors.

Scouring assistant for rayon and acetate.

Leveling agent or retarder in acid dyeing of wool.

Assistant in chlorination of wool in shrinkproofing.

Dispersing agent for pigments in organic vehicles.

Assistant for insuring more even exhaustion of anionic or cationic hosiery finishes.

Improving penetration and leveling of acid, direct and acetate dyes.

Want a Sample?

We'll be glad to send a liberal sample for testing purposes.

onyx

CHEMICALS FOR TEXTILE PROCESSING

Onyx Oil & Chemical Company

JERSEY CITY 2, N. J.

CHICAGO · PROVIDENCE · CHARLOTTE · ATLANTA · LOS ANGELES

In Canada: Onyx Oil & Chemical Co., Ltd. Montreal, Toronto, St. Johns, Que.

For Export: Onyx International Jersey City 2, N. J.

HOW WOULD YOU PRINT THIS PATTERN ON COTTON DRESS GOODS?

To produce this dainty dress-goods pattern, Rock Hill Printing and Finishing Company, subsidiary of M. Lowenstein & Sons, Inc., selected Aridye* Pigment Colors. Rock Hill executives knew from experience that this was by far the simplest method and would have several other important advantages as well. The printing order and formula for each color were as follows:

YELLOW—Aridye Yellow FY2G 4832 cut 1:8 with Aridye Clear 6214; PINK—Aridye Red FD2B 4302 cut 1:48; GREY—1½ parts Aridye Black FK 4214 and 1 part Aridye Blue FC2G 4720 cut 1:60; BLACK—18 parts Aridye Black FK 4214 and 1 part Aridye Blue 4720 cut 1:1¼; GREEN—4 parts Aridye Green FJB 4410, 8 parts Aridye Yellow FY2G 4832, and 1 part Aridye Blue FC2G 4720 cut 1:10.

The fabric was merely printed, dried, and finished, no ageing, soaping, or other after-treatment being necessary. Note particularly the clean, unbroken outline, and the closeness of register which was easily maintained due to visibility of the color during printing. Fastness to light and laundering met or exceeded all requirements for fine cotton dress goods.

Because they obtain results such as these, Rock Hill and other leading printers have changed to Aridye Pigment Colors for solving difficult problems and for better everyday printing jobs. Interchemical technical representatives, experts in the printing of cotton, rayon, and other natural and synthetic fibers, are available to help you solve *your* printing problems. Write to Interchemical Corporation—Textile Colors Division —*pioneers in pigment colors for textiles*— P. O. Box 357, Fair Lawn, N. J.

*Reg. U. S. Pat. Office

CHECK THESE EIGHT ADVANTAGES

Sharpness of Mark • Exceptional Fastness to Sunlight
Uniformity of Shade • Fastness to Washing
Bright Colors • Economy
Ease of Application • No Impairment of Hand

Aridye *Pigment Colors*

INTERCHEMICAL CORPORATION TEXTILE COLORS DIVISION • FAIR LAWN, N. J. • ROCK HILL, S. C. • PROVIDENCE, R. I.

FEWER REDYES
FEWER SECONDS

WITH NEW INTERCHEM ACETATE DYES

Because Interchem* Acetate Dyes are colloidized during manufacture they are highly dispersible. When pasted with water, they disperse rapidly and completely, leaving no undispersed particles. For this reason there is virtually no danger of dye specks, and time-consuming, costly redyes and seconds are cut to the minimum.

Interchem Acetate Dyes are suitable for dyeing acetate rayon and nylon on jigs or boxes. They are useful for producing both self shades and compound shades.

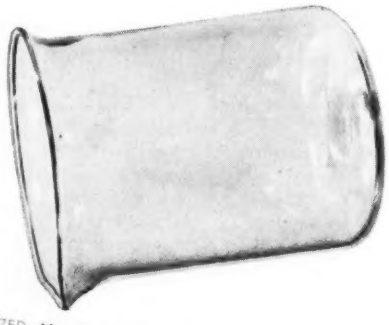
Interchem Acetate Dyes promote level dyeing, give more consistent results from dye formulas, make possible better color-matching control. They have good pile on. They do not tar at high temperatures. Some Interchem Acetate Dyes are suitable for ground shades for discharge printing or for application printing.

Interchem Acetate Dyes are now available in blue, red, rubine, bordeaux, yellow, and orange. Others will be ready soon.

An Interchemical technical service man will be glad to discuss with you where and how you can benefit from the use of Interchem Acetate Dyes. For samples and full information, write to Interchemical Corporation—Textile Colors Division, P. O. Box 357, Fair Lawn, New Jersey.

INTERCHEMICAL CORPORATION • TEXTILE COLORS DIVISION
FAIR LAWN, N. J. • ROCK HILL, S. C. • PROVIDENCE, R. I.

Not Colloidized: To beaker of hot water add ½ ounce of any acetate dye. Stir for 30 seconds, and pour off contents. If small dye granules are left in the beaker, dispersion has been incomplete and "specking" might result from use of the dye.



COLLOIDIZED: Now try the same test with an Interchem Acetate Dye. Note that no dye granules are left when beaker is emptied. Their absence proves the high degree of dispersibility of the colloidized Interchem Acetate Dyes.

Aridye PIGMENT COLORS
REG. U. S. PAT. OFF.
Interchem Dyes

*Trade Mark

The Detergent that detours trouble

ORATOL L-48

● No guessing when you use Oratol L-48! This sulphonated amide is a powerful detergent with great foaming, emulsifying and wetting properties—gives equally successful results with cotton, wool, silk, rayon, acetates and aralac fibres!

Oratol L-48 is stable in hard water, under acid or alkaline conditions. Its use prevents the formation of insoluble soaps on the surface of dye liquors, and it acts as a dispersing agent for lime soap deposits. As a detergent and scour, in bleaching, dyeing and finishing, Oratol L-48 is outstanding! Priced low, this highly efficient product is well worth your attention. Samples and information on request.

WOLF BRAND PRODUCTS

JACQUES WOLF & CO.
Chemicals PASSAIC, N. J.
OTHER PLANTS: CARLSTADT, N. J. • LOS ANGELES, CALIF.
WAREHOUSES: Providence, R. I., Philadelphia, Pa., Utica, N. Y., Chicago, Ill., Greenville, S. C., Chattanooga, Knoxville, Tenn.

Valuable additions to our line of . . .

Pharmasols

Brown 2G produces a bright yellow Brown of excellent fastness to washing at a low cost.

Brown R produces a warm Brown of general all-around fastness.

Seal Brown yields a deep Brown at low cost and is of good all-around fastness.

THE THREE NEW BROWNS PRODUCE DESIRABLE TAN SHADES WHEN PRINTED IN REDUCED STRENGTH

THESE NEW BROWNS, especially Seal Brown and Brown R, are easy to apply and show a very pronounced improvement in their

FASTNESS TO LIGHT

against our former Browns

CARBIC COLOR AND CHEMICAL CO., INC.

451-453 Washington Street, New York City

BRANCHES:
PHILADELPHIA
PROVIDENCE HAMILTON, ONT.
CHARLOTTE, N. C.

IMPORTERS OF THE MANUFACTURES OF
DURAND & HUGUENIN S. A.
BASLE, SWITZERLAND

EXCLUSIVE DISTRIBUTORS OF
PHARMASOLS
PHARMOLS
PHARMACINES

Representative: Los Angeles (Hathaway Allied Products)

AMERICAN DYESTUFF REPORTER

LOUIS A. OLNEY, D.Sc
Directing Editor

NORMAN A. JOHNSON, B.T.C.
Managing Editor

MYRON D. REESER
Advertising Manager

GRACE B. BURTON
Production Manager

M. H. MORGAN
Circulation Manager

Official Publication of the Proceedings of the American Association of Textile Chemists and Colorists

Published every other Monday by
HOWES PUBLISHING COMPANY, INC.
One Madison Avenue, New York 10, N. Y.

A. P. HOWES
President

C. R. HOWES
Vice President

H. F. CRAWFORD
Treasurer

M. D. REESER
Secretary

C. ESSENBREIS
Asst. Secretary

Also Publishers of
KNIT GOODS WEEKLY
TEXTILE COLORIST
AND CONVERTER

June 2, 1947

VOLUME 36 NUMBER 11

Contents

Contents of previous issues can be found by consulting the Industrial Arts Index at your library

• Special Articles

The Use of Synthetic Resins in the Finishing of Fabrics 285
Domenico Fornelli

• Departments

Patent Digest 288
Paul Wengraf

Trade Notes—New Products..... 305

Abstracts from Contemporary Journals..... 309

• Proceedings of the American Association of Textile Chemists and Colorists

Spring Meeting, Mid-West Section.....P290

Calendar of Coming Events.....P290

Employment Register P290

Banquet Session, Silver Jubilee Convention.....P291

Intersectional Contest Awards.....P292
Louis A. Olney

The Future of the AATCC.....P293
William D. Appel

Five Atomic Bombs and the Future.....P295
Karl T. Compton

Spring Meeting, South Central Section.....P297

June 7th Meeting, Southeastern Section.....P297

Meeting, New York Section.....P297

Membership on May 1, 1947.....P297

Industrial and Apparel Leathers.....P298
Harold B. Whiting

A Short Method for Control of Finished Weights...P302
Frederic A. Prisley

Flammable Fabrics and their Evaluation.....P303
F. Bonnet

Copyright, 1947, Howes Publishing Co., Inc

IT'S TRUE...

OF EVERY PERSON... MAN, WOMAN, AND CHILD... LIVING IN PARIS, MOSCOW AND BERLIN MADE A TELEPHONE CALL ON THE SAME DAY, THE TOTAL WOULD STILL NOT EQUAL THE NUMBER OF CALLS MADE DURING A SINGLE BUSINESS DAY IN NEW YORK CITY.

IT'S TRUE OF ESSO SOLVENTS

ESSO'S LABORATORY TECHNICIANS ARE CONSTANTLY SEEKING TO BETTER THE EXACTING HIGH STANDARDS OF THE INDUSTRIAL SOLVENTS FIELD. AMERICA'S LARGEST PETROLEUM RESEARCH LABORATORIES ARE THEIR WORKSHOPS... **11 DIFFERENT GRADES OF ESSO PETROLEUM SOLVENTS** ARE THEIR PRODUCTS.

Don't ever puzzle yourself over an industrial solvents problem. Contact an Esso representative. He welcomes the opportunity to serve you with friendly, helpful advice.

STANDARD OIL COMPANY OF NEW JERSEY
Elizabeth, N. J.—Baltimore, Md.—Richmond, Va.—Charleston, West Va.—Charlotte, N. C.—Columbia, S. C.—New Orleans, La.—Little Rock, Ark.—Memphis, Tenn.

STANDARD OIL COMPANY OF PENNSYLVANIA
Philadelphia, Pa.

COLONIAL BEACON OIL COMPANY
Boston, Mass.—New York, N. Y.

AMERICAN
DYESTUFF REPORTER

VOLUME 36 June 2, 1947 NUMBER 11

The Use of Synthetic Resins in the Finishing of Fabrics

DOMENICO FORNELLI
Research Chemist, A.C.N.A., Milan, Italy

THE principal requisites of a textile fabric are: its "wearability" or resistance characteristics, its "hand" or exterior characteristics, its "price" or economical characteristics. Finishing processes have the primary object of modifying the appearance of fabrics enhancing the natural properties of the fibers. Only when we consider, however, that by means of these processes that it is also possible to obtain positive results along the lines of each of the three above-mentioned requisites, can we understand the importance of finishing operations. Great strides are being made nowadays in this field.

The treatments to which textile fibers were submitted, can be entirely mechanical such as calendering, framing, glazing and embossing or accompanied by the application of specific substances which modify the properties of fibers or impart new ones.

These substances can be grouped into categories according to the prevalent effect they impart.

Thickeners: for imparting body to the fabrics. (flours, starches, glues, gums, etc.)

Weighting Agents: to increase the weight of the fabric. (soluble metallic salts such as sodium sulfate, magnesium sulfate, or insoluble salts as calcium sulfate, barium sulfate, calcium carbonate, etc.).

Hygroscopic Substances: to make the fabric absorbent to the humidity of the environment thus giving a soft and full hand. (glucose, glycerine, sulforicinates, mucillages.).

Brightening Substances: applied in connection with calendering or glazing. (waxes.).

Waterproofing Substances: (latex, aluminum and zinc soaps).

Antiseptics: (formaldehyde, phenol, para-di-chlorbenzene).

Dyestuffs: added to finishes for tinting and blueing colors.

Other finishing processes are those produced on woolen fabrics, e.g., napping and shearing.

Finishes can be fugitive, semi-durable or permanent.

Fugitive finishes are those that are readily removed by moisture or washing.

Semi-durable finishes have greater fastness and are carried out by anchoring substances inside or on the fiber.

Permanent finishes, instead, confer to the textile materials new properties which remain unchanged by any washing, dry-cleaning, etc., to which the garment is subjected to. It is possible to obtain them by mechanical means (fulling of wool) or by chemical alteration of fiber (wool chlorination, by mercerization of cotton, etc.).

In the fabric finishing field the market tends towards fast finishes, that is, permanent or at least semi-durable types; and chemistry by the introduction of synthetic resins, points the way to a partial solution of the problem.

The literature of the synthetic resin field is vast because of the development of resinous products by the plastic industry.

Under the name of synthetic resins we usually comprise a great number of products, different by origin, composition and properties. In the main, we can say that they are highly polymerized chemicals, not having a well specified chemical constitution and obtained by synthesis, starting from relatively simple raw materials. Their physical form varies from a solid stage to a state of fluidity and between these two stages there are all the intermediate forms. Resins were originally used in the textile industry merely to protect machinery, for varnishes and protective coating on textiles. There were various resins which appeared in the following order: Colophony glycerides, coumarene-indene resins, the phenol-formaldehyde resins, afterwards the glyptal and alkyd resins obtained by condensation of phthalic acid with glycerine. All these resins were generally used as varnishes.

In the selection of resins to be applied in the finishing of fabrics, we have various criterions to help us.

Synthetic resins can be thermo-plastic or thermo-setting, that is, they take, with heating a plastic form, or "set" to a state of absolute rigidness.

Such a difference is of great importance to establish the best conditions for application in textile finishing.

The resin must be colorless, odorless, stable to the atmospheric conditions and to treatments to which the fabric must be submitted. Its compactness must be such to impart the desired hand to the fabrics.

The synthetic resins groups appertain to classes of various compounds such as the hydrocarbons, alcohols, phenols, esters, amides, and amines. They are obtained by condensation or by polymerization and can be classified in three main groups:

1. Condensation Products

(Poly-Condensation)*

To this group belong:—the phenol-formaldehyde resins (phenoplastics), urea-formaldehyde resins (amine-plastics). The last are obtained by condensation of two

*See footnote next page.

reagents and give under suitable pH and temperature conditions a hydrophylic colloid (pre-condensated) soluble in water, which by action of a catalyst, become insoluble by poly-condensation. The glycerol-phtalic aldehyde resins (glyptals, alkyds), thiourea-formaldehyde, melamine-formaldehyde resins, also belong to this group.

2. Polymerization Products

(Co-Polymerization)

To this group belong:—olefins originating from acetylene and ethylene, vinyl chloride and acetate, styrene, acrylic and methacrylic acid esters. They are thermoplastic substances, some reach the rigidity of glass. Products having as basis the mixed polymers (co-polymers) are also offered on the market,

3. Natural High Polymers

To this group belong:—cellulosic derivatives; esters such as cellulose acetate obtained from cellulose with acetic anhydride; ethers such as ethyl-cellulose obtained by reacting diethyl sulfate with cellulose in suitable conditions and hydroxymethyl-cellulose.

These products are not resins in the true sense of the word but they receive this designation because of their similarity to resins, either in general properties or because of use.

The first and second group are constituted by products obtained by total synthesis; the third group by products obtained by partial synthesis.

Use In Finishing

The purpose of resin applications is substantially to ennoble the textile fibers, giving better qualities to fabrics of artificial cellulosic fibers, making them more like fabrics of wool or natural silk, coupled with an economical advantage. We can say that the incentives for such technical progress have been due, at least in Europe, to the necessity of replacing expensive combed or carded woolen cloths and in America to the shortage of natural silk. Together with the specific effects for which they are used, resins confer to the fabric a greater resistance and durability. Along these lines, therefore, the synthetic resins have found their best development.

Anti-Crease Treatment

This is one of the most important processes to which fabrics of vegetable or artificial fibers are submitted and its purpose is to decrease the tendency to form creases. The applications comprise the simple formulation (treatment with formaldehyde in the presence of acid) to the application of more complex synthetic resins.

Patents of Tootal Broadhurst Company (E. P. 291,473; E. P. 291,474) concerning the application of urea-formaldehyde resins are basic and well known. These resins give water soluble products (precondensated) with which the cloths are impregnated on padders, after adding an acid catalyst to the solution (mineral or organic acid or their salts or organic hydrochloride bases) and softening agents (tertiary-amine salts or quaternary ammonium salts, etc.). The resin becomes insoluble on the fiber by a short thermic treatment at high temperature (300° F.). The precondensate or partially polymerized resin consisting of mono- or dimethylolurea is afterwards transformed into insoluble methylenurea. Resins formed from urea derivatives (thio-urea, glucose ureide, etc.) are also employed.

Numerous indeed, are the patents which have been issued; many of them mentioning simple variations of the application modalities, of condensing or softening. Urea-formaldehyde resins have been modified mixing them with ammonium sulfide or sulfocyanide. Such products are not catalysts but resin forming. (Resines et Vernices artificielles E. P. 424,535). The I. G. patented (F. P. 767,147) the use of an aldehyde with elevated polymers such as polyvinylic alcohol or polyglycerol.

Numerous patents mention the use of resin formed with an acid, formaldehyde, colophony or hydroxyamines. The more recent patents concern the application of melamine-formaldehyde resins; (Ciba E. P. 466,015; I. G. E. P. 458,877). This last application avoids the use of acid catalysts which damage cellulosic fibers during the final thermic treatment.

The production of anti-crease effects is made possible by resin formation inside or on the surface of fiber. The presence of resin inside the fiber and the mechanical and physical interactions unfortunately cause fiber damage; and work has been carried out to void the penetration of resin into the fiber. According to F. P. 815,726 of Raepsaet, Boston and Perlmutter, to preserve fibers from direct contact with resins, the cloth is first given a rubber treatment and afterwards impregnated with urea-formaldehyde. The resulting anti-crease effect and the hand of cloth are excellent. According to the same principle, the cloth can be impregnated with a wax emulsion and then with dimethylolurea solution containing mono- or bisodium sulfate.

The success of the anti-crease process depends on many factors among which we note: the preliminary scour of the textile material (it must be free from alkali and lime soaps, in order that the distribution of resin on the fiber be uniform). The pH of resin solution must be maintained constant by the use of Buffer solution; the final temperature to which the cloth is submitted (it is more convenient to give a short drying at high temperature rather than a long one at a moderate temperature).

Stiffening and Weighting by Use of Resins

With the use of synthetic resins in this important branch of finishing, some wash fast finishes are obtained; cellulose ethers and esters are employed. Methacrylic resins can also be used. These resins give the cloth a full hand, resistant to normal washing and dry-cleaning; they also impart good abrasion resistance. Resins are also used in combination with starch materials and gums employed in finishing; with this method many different finishes are obtained. The priority in this case goes to patents E. P. 437,642 of Calico Printer Association and Swiss 175,998 which covers the fixation of weighting materials using urea-formaldehyde or other resins. Generally, the advantages obtained by additions of synthetic resins to starches and other materials are a firmer hand, greater permanency and translucency and better wearing qualities. The weighted finishes do not dust. In Swiss P. 183,433 to Ciba, the cloth is finished with a starch dispersion plus methylolurea and it then is subjected to a short heating on plates at 260° F.

Non-Slip Finishes on Rayon Fabrics

A main drawback of rayon fabrics and garments in comparison with cotton goods is to show slipping of the warp and filling threads under strain, particularly at the seams. To avoid this effect some synthetic resins are applied on the cloth, rendering the surface rough and binding them together. According to patents (E. P. 397,711 and F. P. 806,086) of British Celanese and I. G. aqueous solution or emulsions of polyvinylic resins are used. A treatment of the cloth with aqueous solution of a product obtained

---

* Condensation is the interlocking of molecules by loss of water, ammonia, etc. The originating substances are generally of low molecular weight.
Poly-condensation is the passage of water soluble, partially condensated products to an insoluble state (hardening of resin), e.g. urea-formaldehyde resins.
Polymerization is the linking of simple molecules without loss of atoms, giving molecules of greater size; usually the originating substance is one only but when two liquid monomers are polymerized simultaneously under strictly controlled conditions, the process is called co-polymerization. The most important example of the latter is the preparation of vinyl chloride and vinyl acetate resins.

with a mixture of urea, formaldehyde and acetone, mixed at incipient reaction with colophony, glycerine, a liquid hydrocarbon, was also proposed. (Oranienburger Chemische Fabrik G. P. 717,093).

According to the G. P. 705,045, an excellent non-slip finish is obtained utilizing water soluble salts, obtained for instance by treating mixtures of colophony and aromatic hydrocarbons with sulfuric acid.

Glycero-phthalic resins are convenient too. U. S. Patent 2,050,156, H. C. Borghetty, covers many types of materials to give nonslip stabilized rayon fabrics.

Trubenizing

This process covers the bonding of multiple layers of cloth together (laminated cloths). The resultant cloth is of great rigidity and is durable to washing and therefore applicable for the shirting industry. The process is carried out by inserting between two cotton-goods, a rough structured cloth, consisting of a simple webbing of cellulose acetate threads. By passing these cloths through acetone or alcohol, the cellulose acetate becomes plastic and after heat and pressure are applied the acetate adheres to the two cloths forming a single body. These cloths remain bonded after washing, but become detached when submitted to the action of organic solvents. To eliminate this inconvenience, synthetic resins are used. Two or three layers of the cloth are covered with a layer of resin in aqueous solution or emulsion, afterwards submitted to heat and pressure. According to the E. P. 473,478 of Cluett, Peabody, a vinyl acetate and chloride co-polymer solution is applied as an intermediate layer between two cloths. The Deutsche Celluloide Fabrik proposed the use of a methyl methacrylate and vinyl chloride co-polymer.

Vinyl polymers have been proposed; plasticized polystyrene with alkyl phtalates are also used.

An I. G. Patent (F. P. 818,775) concerns the application as bonding materials of polyvinyl acetate and polymethyl acrylate. Mixtures of isobutyl resins with latex and cellulosic esters can be used. Among these, aliphatic ethers of low molecular weight, such as cellulose acetopropionate and acetobutyrate are notably important.

Embossing

Such undulatory effects on cloths are produced mechanically by calenders in which a properly engraved cylinder is used; but the effect obtained is not washfast. Synthetic resins can be employed to give durability. According to the F. P. 809,823 of the Swiss firm of Radurer Bener (F. P. 779,607), the cloth is dipped in a solution of condensed products, dried partially and then passed over a heated embossing calender. It is thus possible to locally modify the cloth structure, because the hardening of resin is produced only on the embossed portions. The excess resin solution is eliminated from the non-embossed parts by washing. It is possible to obtain wash-fast results by this method.

Water-Repellency

The various degrees of water resistance of fabrics comprise:—

A. Water-Proofing of the total surface of the cloth with obstruction in its air permeability.

B. Hydrophobization or water repellency, proper to the cloth fibers in such a way as to permit air permeability.

The first effect is obtained mainly by gumming with caoutchouc while the second, superior to the former for its hygienic and comfort value, is produced by:—

I. By Chemical Modification of the Fiber Surface (properly called hydrophobization). The functional groups -OH of cellulose can be inactivated and thus lose a great deal of their swelling power.

The relative reactions correspond to an esterification, etherifation and acetylization of cellulose, obtained e.g. respectively, with isocyanates, ethylene oxide and alifatic aldehydes with at least 10 C atoms. For best results the Velan (Zelan) process (methyl stearyl pyridinium chloride) is of great importance.

II. Deposit of Water Repellent Materials on the Fiber: This process, also called pseudo-hydrophobization, is obtained by depositing water repellent materials such as waxes, synthetic resins, etc., on the surface of, or inside the fiber. Metallic soaps of Al; Ca, Mg, Zn (two bath process) and alum soaps with paraffin and wax are used (one bath process). The synthetic resins can be used to fix these hydrophobic finishes to give a better washing fastness.

Good results can be obtained by applying mixtures of paraffin dispersion containing aluminum formate or acetate with stabilized urea-formaldehyde aqueous solution; then by a heat treatment insolublization of resin occurs on the fiber (Moore, U. S. P. 2,200,931). Resins can be utilized to fix other finishing agents. In such a way hydrophobizing results can be given with stearyl methylol amides.

The most suitable condensation products are those of urea-formaldehyde, phenol - formaldehyde, melamine - formaldehyde, acetaldehyde-phenol.

U. S. Patent 2,165,265 covers the use of condensation products obtained from urea derivatives as octodecyl-heptadecyl urea and formaldehyde. DuPont patented (U. S. P. 2,090,593) urea-formaldehyde resins among which are oleyl and stearylurea. Such resins have been patented also by the I.G. but applied from acetonic or pyridinic solutions (F. P. 806,170).

Patents also cover use of mixed polymers as those obtained by polymerization of maleic anhydride with a fatty acid, also vinylic esters of aliphatic alcohols with aldehydes.

Dutch patent 50,024 of Pruefer suggests the impregnation of the cloth with solution of saponified natural and artificial resins soluble in water, appartaining to the phenol-formaldehyde group. Resins are hardened on the cloth by treatment at light pressure between cylinders heated at 300-320° F.

Improvements in Dye Fastnesses

It has been evidenced that very fast dyes are obtained with direct colors on cotton or acid colors on silk, treating these with formaldehyde, dicyandiamine and guanidine-formaldehyde resins (Calico printer G. P. 670,471). According to another patent of the same company (E. P. 460,201), dye wash fastness is improved by impregnating the cloth with urea-formaldehyde resin solutions in the presence of oxidizing agents (perchloric or persulfuric acid) and heating to 380° F.

The crock fastness of naphthols is improved by replacing the final soaping with a treatment of a soluion of phenol, formaldehyde, casein and ammonia, then drying. The casein fixes the resin formed. (Teintex, 1992, p. 156).

According to Sandoz patents (E. P. 464,921), direct color fastness can be increased by the dyed material with condensation products of glycerine with nitrogenous bases.

U. S. P. 2,080,543 covers a process giving similar results by after-treating with polymerized amines as polyethylene-polyamine obtained by condensation of ammonia with ethylene chloride.

Synthetic resins make it also possible to obtain better affinity for dyestuffs where this is a natural deficiency.

A Calico Printer patent (F. P. 646,529) mentions the treatment of textile material with the aim of imparting affinity for acid colors together with an anti-crease effect, by impregnating with a mixture of formaldehyde and isocyclic sulfonic acids (i. e. o-amino-phenol-sulfonic acid, benzosulfonic acid, and naphtenic acids).

With condensation products of cyanamide-formaldehyde it is possible to impart to cellulose and even to animal fibers,

(Concluded on Page 312)

• PATENT DIGEST •

Laminated Fabrics — Citric Esters as Plasticizers G, 2, 01

U. S. Pat. 2,409,703/4

(Celanese Corp. of America, Lyem, Oct. 22nd 1946)

Laminated fabrics are used for water repellent cloth, for permanent finished linen, covers and the like. They consist generally of two sheets of regular fabric, bound together by an intermediate sheet, prepared so that both of the outside fabrics stick firmly to this sheet and cannot be separated any more. According to another method (the so-called "Trubenizing" process) the fabric is prepared in such a way that the single sheets, sticking normally together and separating in a washing operation are laminated again by pressure and heat because of the thermoplastic character of the intermediate layer. The present invention suggests to weave an intermediate layer from thermoplastic (acetate of cellulose) and non thermoplastic yarns. The combined fabric is padded with a plasticizer composition, containing *tri-ethylcitrate,* emulsified with an higher alkylsulfate (such as Duponol OS), or dissolved in dilute alcohol. It has been observed that the major part of the plasticizer is selectively absorbed by the cellulose acetate fiber and that only a negligible amount of the plasticizing compound is retained by the non-thermoplastic part (generally cotton threads). Laminating can be carried out further in any known way for instance by wetting the composite fabric with water or steam and subjecting it thereupon to heat and pressure.

References: The so-called "Trubenizing" process (see above) is covered by U. S. Pat. 1,968,409/10 (inventor B. Liebowitz). It has the purpose to produce launderable cloth by placing a net of acetate of cellulose between two sheets of fabric, intended for instance for manufacturing shirts. By wetting the combined fabrics with a solvent (acetone) and by subsequent hot calendering process the three layers (net and fabrics) stick together while penetration of water and air is not impaired because of the reticular nature of the intermediate layer. French Pat. 799,838 (Redman) proposed to laminate the two external layers by an intermediate fabric, impregnated with polyvinyl solutions. Swiss Pat. 182,941 (Eigenmann & Lantz) describes combined fabrics in which the middle layer consists of cotton-blended acetate of cellulose yarn while acetone is used as the plasticizing agent, applied before calendering. French P. 794,642 (Dreyfus), recommends using an intermediate sheet of acetate of cellulose which is softened up by a plasticizing agent, for instance dimethylphtalate, dissolved in benzene.

PAUL WENGRAF

Water Repellent Textiles— Ketenes used G, 2, 04

U. S. Pat. 2,411,860 Heberlein Patents Corp., Hentrich—Hueter, Dec. 3. 1946)

Although many processes for rendering fibers water repellent have been proposed in the last years the results were not quite satisfactory, according to the present specification. Some water repellent finishes caused undue losses in the tensile strength of the treated fibers, other methods gave effects not resistant to dry-cleaning processes, some of them were also impractical because of the high price of the ingredients used in the method. Now it has been found that cellulosic textiles, treated with *higher molecular ethenones or ketenes* and subjected to a mild heating treatment, offered satisfactory results in every respect. Ketenes are produced according to the U. S. Pat. 2,383,863, granted to one of the inventors (Hueter) by treating higher fatty acid halogenides with strong tertiary bases in an organic solvent. The reaction has the following advantage: the amine halides, formed as by-products in the reaction, settle out and the higher ketenes remain in solution. This solution can immediately be used as an impregnating agent. So for instance a 2% solution of cetylketene in benzine is prepared and a rayon fabric is soaked therein. The textile material is removed and dried first at low temperatures and thereupon warmed at 110° C. The impregnation is permanent to soap treatments and to dry cleaning.

References: The process for preparing higher ketenes protected by U. S. Pat. 2,383,863, is illustrated by the following equation, regarding the reaction of triethylamin and laurylchloride, dissolved in carbondisulfide:

$$N(C_2H_5)_3 + C_{10}H_{21}CO.Cl. \rightarrow C_{10}H_{20}CH{:}CO + N(C_2H_5)_3.H\,Cl.$$

= Laurylketene

Ketenes are not generally used in textile processes. A literature reference disclosing the use of ketene as an *acylating agent* can be found in U. S. Pat. 2,342,634 (Nat. Dairy Prod.): proteins are reacted with ketenes to increase their resistance to hot water, soaps, etc. High substituted ketenes are used o gether with organic thiocyanates for molding purposes: see U. S. Pat. 2,296,-249 (du Pont).

Starch Treatment — High Frequency Waves G, 1

Brit. Pat. 579,702

(Neumann, Aug. 13, 1946)

Different procedures have been proposed to convert starch into soluble starch or dextrine. Heat treatments, acid or alkali treatments, and enzyme reactions are well known for this purpose. They are said to require a considerable time. The present invention suggests to combine the known methods with a di-electric heating operation at high frequencies between the plates of a condenser. These frequencies have to be above 100,000. (Radio frequencies are included). The effect of this treatment is proved thereby that the degradation goes as far as to glucose formation under the influence of high frequencies while only cold swelling starch is obtained under otherwise unchanged conditions when no electric heating is applied. The invention seems to be useful for many different applications because of the high reaction's speed and the energy developed in this process.

Reference: An old publication, Brit. P. 1061, 1892, (Hermite) could be found, proposing a starch treatment by electrolysis. A starch slurry in water, containing 5% NaCl and 0.5% $MgCl_2$ was connected with an electric source. Electrolysis occurred and purification of starch was obtained. Obviously however the present treatment is combined from electrolytic and heat effects.

Creaseproofing — Thiocyanates and Metaphosphates G, 2, 04

Brit. Pat. 579,709

(Courtaulds, Whittaker, August 13, 1946)

The development of creaseproofing methods for textiles is reported in this patent. Single milestones were the well-known Toot-al-Broadhurst treatment, using resin condensates (Brit. P. 291,473-74) and the application of condensates of urea-formaldehyde — ammonium thiocyanate or urea-formaldehyde — ammonium sulfide according to the patents of Resines et Vernis Artificels (Brit. P. 424,535 and French P. 753,559). A further improvement is claimed in the present patent by using partially condensed resinous aldehyde reaction products, containing both *ammonium thiocyanate and sodium hexametaphosphate.* An example teaches to bring formaldehyde by mixing it with caustic soda to a pH of 9 and to add urea. The padding solution contains 2% ammoniumthiocyanate and 0.2% sodium hexametaphosphate. The impregnated material is cured at 140° C. The crease resistance of the untreated material was 50%

(Continued on Page 311)

Proceedings of the
American Association of Textile Chemists and Colorists

June 2, 1947

National Officers of the Association

President
HENRY F. HERRMANN
General Dyestuff Corp., 435 Hudson Street, New York 14, N. Y.

Vice-Presidents
C. NORRIS RABOLD
Union Bleachery, Greenville, S. C.
JOHN N. DALTON
Pacific Mills, Lawrence, Mass

Treasurer
WILLIAM R. MOORHOUSE
National Aniline Division, Allied Chemical & Dye Corp., 150 Causeway Street, Boston 14, Mass.

Secretary
HAROLD C. CHAPIN
Lowell Textile Institute, Lowell, Mass.

President Emeritus and Chairman of the Research Committee
LOUIS A. OLNEY
Lowell Textile Institute, Lowell, Mass.

Director of Research
HAROLD W. STIEGLER
Lowell Textile Institute, Lowell, Mass.

COUNCILORS
Representing Sections

Rhode Island: HOWARD V. KING, HAROLD B. STURTEVANT, RALPH F. CULVER.
Philadelphia: CURT R. BAERINGER, LLOYD O. KOONS, ARTHUR W. ETCHELLS, BOYCE C. BOND, PERCIVAL THEEL.
New York: PATRICK J. KENNEDY, LEONARD S. LITTLE, THOMAS F. O'BRIEN, GEORGE L. BAXTER, EMMETT J. DRISCOLL, WINN W. CHASE, HAROLD H. TAYLOR.
Northern New England: EDWARD S. CHAPIN, WALTER J. HAMBURGER, DELBERT E. RAY.
Piedmont: SIDNEY M. CONE, RAPHAEL E. RUPP, LELAND G. ATKINS.
Southeastern: WILLIAM B. GRIFFIN.
South Central: ANDREW J. KELLY
Mid-West: ERIC W. CAMP, SAMUEL KLEIN.

Past Presidents

ELVIN H. KILLHEFFER, P. J. WOOD, WILLIAM H. CADY, ALBAN EAVENSON, CARL Z. DRAVES, THOMAS R. SMITH, WILLIAM D. APPEL.

Standing Committees of the Council and their Chairmen

Executive Committee on Research
J. Robert Bonnar, Chairman

Publicity
Winn W. Chase, Chairman

Conventions
Kenneth H. Barnard, Chairman

Appropriations
William R. Moorhouse, Chairman

Constitution and By laws
Harold C. Chapin, Chairman

Membership and Local Sections
John N. Dalton, Chairman

Corporate Membership
Emmett J. Driscoll, Chairman

Publications
Louis A. Olney, Chairman

Technical Programs
Miles A. Dahlen, Chairman

Local Sections and their Officers

Northern New England Section

Chairman
George O. Linberg, Monsanto Chemical Co., 140 Federal Street, Boston 10, Mass.

Secretary
Azel W. Mack, Dexter Chemical Corp., 581 Boylston Street, Boston 16, Mass.

Vice-Chairman — Frank J. O'Neil
Treasurer — Martin H. Gurley, Jr.

Rhode Island Section

Chairman
George H. Wood, Jr., 40 Valentine Circle, Apponaug, R. I.

Secretary
Emory A. Richards, Airedale Worsted Mills, Inc., 928 Park Ave., Woonsocket, R. I.

Vice-Chairman — Robert W. Joerger
Treasurer — Robert F. Farwell

New York Section

Chairman
Herman E. Hager, General Dyestuff Corp., 435 Hudson Street, New York 14, N. Y.

Secretary
Norman A. Johnson, American Dyestuff Reporter, One Madison Ave., New York 10, N. Y.

Vice-Chairman — Charles W. Dorn
Treasurer — John H. Hennessey

Philadelphia Section

Chairman
Walter Fancourt III, W. F. Fancourt & Co., 516 S. Delaware Ave., Philadelphia 47, Pa.

Secretary
A. E. Raimo, John Campbell & Co., S. E. Corner Broad and Spring Garden Sts., Philadelphia 23, Pa.

Vice-Chairman — Arthur M. Gordon
Treasurer — James Dixon

Piedmont Section

Chairman
Wyss L. Barker, National Aniline Division, Allied Chemical & Dye Corp., P. O. Box 659, Charlotte 1, N. C.

Secretary
Robert H. Smith, Melrose Hosiery Mills, High Point, N. C.

Vice-Chairman — John B. Neely
Treasurer — Roy J. Beauregard

South Central Section

Chairman
Jack Anderson, Peerless Woolen Mills, Rossville, Ga.

Secretary
Charles A. Spratt, National Aniline Division, Allied Chemical & Dye Corp., Chattanooga, Tenn.

Vice-Chairman — William J. Kelly
Treasurer — Robert J. Quigg

Mid-West Section

Chairman
Al. J. Feit, E. I. duPont de Nemours & Co., Inc., 7 S. Dearborn Street, Chicago, Ill.

Secretary
George B. Chabot, Jr., Calco Chemical Division, American Cyanamid Co., 146 W. Kinzie Street, Chicago, Ill.

Vice-Chairman — George E. Osha
Treasurer — Joseph H. Jones

Southeastern Section

Chairman
A. Kempton Haynes, Rohm & Haas Co., Inc., 1811 Meadowdale Ave., N. E., Atlanta, Ga.

Secretary
Howard M. Waddle, West Point Mfg. Co., Shawmut, Ala.

Vice-Chairman — Matthew T. Barnhill
Treasurer — Allyn J. Morse

Student Chapters

Lowell Textile Institute
North Carolina State College
Philadelphia Textile Institute
New Bedford Textile Institute
Georgia School of Technology

Members should notify the Secretary immediately of all address changes

Spring Meeting, Mid-West Section

THE Spring meeting of the Midwest Section was held at the Schroeder Hotel in Milwaukee, Wisconsin, April 12, 1947.

The afternoon meeting was called to order at 2:25 P.M. and was attended by 85 members and guests.

Open Forum

First on the agenda was our open forum discussions.

Question No. 1.

Mark Kremers asked how the trade felt about using the 130 volume hydrogen peroxide now being offered by the suppliers?

Answer:

Herman Boxser stated his plant has been using it with good results and feels it has better money value. He suggests storing it in a cool dry place. They use it in a standing bath for four runs, titrating before each run. Leslie Meyers corroborated the above statement and reported no storage problem even in hot weather.

Question No. 2.

Al. Olson requested information regarding types of colors most suited for dyeing hosiery consisting of 80% nylon and 20% silk.

Answer:

Louis Hoehn recommended selected acetate colors which will keep off the silk, plus colors, or selected milling colors to produce a good union. Use of Milling Black was not advocated as it builds up on nylon. Alizarine Green works better.

Clarence Wille suggested selected direct colors and acetate dyes. Norman Koehler pointed out this combination is always very difficult to control.

Question No. 3.

Herman Boxser inquired as to best procedure for preparing piece goods composed of wool and waste cotton blended on the cards for dyeing a good union in a reel machine. Would pectins cause uneven dyeing?

Answer:

Harold Doyle suggested a good soap scour should be satisfactory.

Al. Feit recommended a pyridine or pine oil solvent scour.

Arthur Hultberg felt the pectin was not responsible for uneven coloring, but more likely it was a hard water soap resist.

A. Alexander suggested a high temperature desizing agent.

* * * *

At this point Al. Feit introduced the afternoon speaker R. P. Parshall of the Foxboro Company. Mr. Parshall delivered a timely and interesting lecture entitled "Instrumentation."

After some discussion relating to the lecture, Arthur T. Brainerd introduced a distinguished guest, Dr. Raymond Gundst of the Ciba Ltd. Research Laboratories, Basle, Switzerland. Dr. Gundst was then accorded a hearty welcome and we trust his visit will be enjoyable.

The meeting adjourned at 4:00 P.M.

Dinner was served at 7:45 P.M. and 72 members and guests were present.

The secretary's report and the treasurer's report were then accepted as read.

Al. Feit introduced the speaker of the evening, Walter Jaeger of the Textile Resin Department of American Cyanamid Company who delivered a paper entitled "Textile Resins." The paper was of timely interest and very well received.

New Business

On a motion by Arthur T. Brainerd, seconded by Mr. S. Klein, the secretary was instructed to send flowers to Paul O. May, at the Ravenswood Hospital where he is recuperating from an illness.

The meeting adjourned at 9:45 P.M.

Respectfully submitted,

GEORGE B. CHABOT, JR.
Secretary.

CALENDAR

EXECUTIVE COMMITTEE ON RESEARCH
Meeting: June 4 (Hotel Pennsylvania, New York).

COUNCIL
Meeting: June 6 (Hotel Pennsylvania, New York).

RESEARCH COMMITTEE
Meeting: June 6 (Hotel Pennsylvania, New York).

NEW YORK SECTION
Outing: June 20. (North Jersey Country Club).

PHILADELPHIA SECTION
Outing: June 13. (Atlantic City Country Club).

NORTHERN NEW ENGLAND SECTION
Meetings: September 26, November 21.
Outing: June 13.

PIEDMONT SECTION
Outing: June 20 and 21. (Ocean Forest Hotel. Myrtle Beach, S. C.)

MID-WEST SECTION
Outing: June 21 (Lake Lawn, Delavan, Wis.)

SOUTHEASTERN SECTION
Meeting: June 7. (Atlanta, Ga.)

SOUTH CENTRAL SECTION
Meeting: June 7 (Hotel Patten, Chattanooga). Meeting at 3 P.M. Speaker: Dr. O. M. Morgan, Special Products Division, Allied Chemical & Dye Corp., "Application of Synthetic Detergents in Dyeing, Finishing and Cleanliness." Dinner at 7 P.M.

NATIONAL CONVENTION
October 23, 24, 25. (Congress Hotel, Chicago. Ill.)

National Convention
October 23, 24 and 25
Congress Hotel, Chicago
Auspices: Mid-West Section

EMPLOYMENT REGISTER

This column is open for four insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the Secretary of the Association, Lowell Textile Institute, Lowell, Mass. It is understood that these will be open to inspection by prospective employers, who can obtain further information through the code numbers from the Secretary.

47-26

Education: High school, with college extension courses.
Experience: Nineteen years with two companies, mainly skein dyeing, various fibers, in charge of department.
Age 39; married, references; will work anywhere in U. S.

47-27

Education: Graduate Pratt Institute, additional college training.
Experience: Twenty years research, development, control; biochemistry, intermediates, dyestuffs.
Age 44; married; references.

47-28

Education: Graduate, Lowell Textile Institute, 1940.
Experience: Chemical laboratory and plant control, dyes and textile resins.
Age 30; married; references.

47-29

Education: Equivalent of two years college in Germany, and Textile College in Czechoslovakia; also commercial background.
Experience: Finishing, dyeing and laboratory testing in Europe and India; specializing in worsteds, woolens and mixtures; production control.
Age 31; married, has received first papers for U. S. citizenship. Work in metropolitan area preferred; will train, with chances of promotion.

Banquet Session

Silver Jubilee Convention, Boston, Mass., December 14, 1946

GEORGE O. LINBERG
Chairman

WALTER J. HAMBURGER
Toastmaster

General Chairman Linberg: Ladies and Gentlemen, all friends of our Association. It is difficult for me to say anything in a few words, and tonight is no exception as there is much I would like to say. I have several volumes of notes here from which I intended to read to you, but, I am going to take the cue from Albert Sampson, at our charter member and corporate member dinner who said: "We come home to our fireside."

I have sat out in the audience many times and wondered why some people sat at the head table and didn't do anything. So now I shall introduce the ones at the head table who are not on the program to speak.

Starting at my right, there is Alban Eavenson, who has come out of retirement as Past President to attend our Silver Jubilee.

Edward Chapin, Chairman of the Reception Committee.

Franklin Hobbs, who has the distinction of being at the same time the only man in America President of the National Association of Woolen Manufacturers and the National Association of Cotton Manufacturers.

Frederick A. Goodall, of England from whom you heard an excellent paper.

J. C. Whitelegg, who just arrived too late on Thursday from Manchester, England, to hear us talk, but who is with us tonight.

P. J. Wood, a Past President and the first Chairman of the New York Section.

J. C. Carney, President of the Canadian Textile Associates.

Dr. Carl Z. Draves, Past President.

Patrick J. Kennedy, Chairman of the Intersectional Contest Committee.

William Moorhouse, our perennial Treasurer.

Dr. Ralph Dorland, President of the Synthetic Organic Chemical Manufacturers' Association, which will celebrate their twenty-fifth or Silver Jubilee next week.

Dr. Harold C. Chapin, our perennial Secretary.

William H. Cady, our Olney Medalist.

C. Norris Rabold, our new Vice-President-Elect.

John Dalton, our new Vice-President-Elect.

Henry Herrmann, our new President-Elect.

Elvin H. Killheffer, past president, the first boss I ever had.

[Applause].

At this time, I want to introduce some of the ladies to you. I am not going to say anything about the excellent Ladies' Committee at this time. But, we have four ladies here who have done a great deal of work for the Association; in addition, this is their first visit here.

Mrs. Mayo
Mona McKenzie
Lois Carrington
Mrs. Elizabeth Chapin

In this, my last duty—and incidentally it was a great privilege to act as General Chairman of the Silver Jubilee Convention—I find it not only difficult but quite impossible adequately to express my thanks to the workers for the success of this convention. I am going to be unfair and praise a few. All should bask in the reflected glory. These gentlemen do not have to stand. Walter Hamburger, head of our Technical Program, with his fine assistants, Professors Fox and Schwarz; Azel Mack, in charge of printing and Registration; J. Bryant, who provided these fine meals for you; Edward Chapin, Chairman of Reception with his assistants, Martin Gurley and Mrs. Abbott. Delbert Ray, Exhibit chairman with his assistant, Roland Derby; Harry Hartnett and Hy Selya, who took care of the hotel and publicity, respectively; Phil Durfee, who up to this time has done nothing; he is the Treasurer and his job just started tonight.

I should like to offer you an opinion, however, of this Executive Committee, which is called "Lindy's Nine Old Men." If I were told that they settled the coal strike, I would believe it. They are fully capable of it, and, I think they had something to do with the weather we have had. We have had so much fun together that we are forming a club called the Twenty-five Club, meeting at least twice a year! [Applause]

Before I stood up, I got something that I hope I can read without choking. It was sent to me, addressed to the Grand Ball Room of the Hotel Statler:

"Congratulations to the first of Lindy's Nine Old Men for a big job well done."

This was signed by "The Eight Others."

Then again, if you want another suggestion as to how to work on a national convention, do as I did. Be appointed General Chairman, and pick your men to do the work, and then sit back and watch them sweat. It is the easiest job of all, and I mean it!

Our Ladies' Committee should be particularly praised. They kept some of the women busy. One told me that she had two nephews at M. I. T. and one at Harvard, and she hadn't time to call them up. In fact, there were eight women at the Fish Pier at quarter of eight this morning!

Now, to be serious for a few moments, and very few. There has been a great deal of work done in the preparation of this Convention, and by a group with no previous experience in national conventions, and that means all of us. Many dead-end streets have been traversed, and to obviate and eliminate this waste of effort, every committee head will render a complete report on his activities, particularly the needless work done, because of lack of experience in this sort of endeavor. Added to these reports will be one by your General Chairman, with recommendations. This so-called bible will be given to the National Secretary, to pass on to the Chairman of the next convention, as we feel it to be a definite aid in making this work easier.

Here are a few statistics. I have turned down invitations to forty-two cocktail parties, and I feel great!

It may interest you folks to know that this is the largest convention we have ever had; 1519 are registered. We have visitors here from India, Australia, England and Canada. We have a particularly large representation from Canada. I should like to have the visitors from Canada please rise. [The visitors from Canada then rose and received an ovation from the audience present.]

We had over 2,000 visitors at our exhibits. We had 400 at the charter and corporate members' banquet.

The innovation this year was the Textile Alumni Luncheon. We had 254 in attendance.

We have over 1,000 at this banquet.

And now, to the committees, large and small; to each individual on these committees, my very hearty thanks for the work you have done. Your own personal satisfaction for a job well done is your only reward, except the probability that you will be asked to serve again.

We have had a man on our Executive Committee who has taken charge of our Technical Program. He has helped us on our registration; he has helped us in our finances. He has tireless energy. He is a very, very versatile fellow and a very unusual man. I have become very fond of him. He is one of God's noble men. I give you at this time your Toastmaster of the evening, Walter J. Hamburger! [Applause]

Toastmaster Hamburger: George is just fixing it up for me so that the Chicago crowd will know what to do!

You have probably heard it said that the Swedes are very, very hard workers. Now, George does a lot of bragging about being a Swede. He's a hard worker all right. You ask any one of the Executive Committee, and they will tell you. We started this thing last March, and George wanted to get it really under way in a hurry. He appointed the Executive Committee. One of the things that he pointed out was that the keynote of the convention was to be courtesy and detail. You may remember at that time that we were undergoing the beginnings of what turned out to be a pretty bad meat shortage. You also know that there has been a lot of griping at conventions about paying $6.00 for a dinner that wasn't worth $3.00. Well, George made up his mind that we were really going to have something to be sure of, and there was going to be meat on the program. He took the matter up with the Statler Hotel and used his best wiles and influences. He couldn't get any promise of meat. He appointed me Toastmaster that we would be sure to have "Hamburger" on the menu! [Laughter]

You know, however, the economic situation changed, and that left George in a bad spot. I got this note from him tonight; I'll read it to you:

"Since economic reasons for your participation in this program no longer exists, I expect at least three good stories."

Well, I've got a lot of them, but I can't tell them here; that's the trouble.

It has been George's policy, as you know, for this convention, to have each participant's place on the program justified. I got there because my name is Hamburger. And now I have to tell stories. Well, being at the head table reminds me of an experience that a friend of mine had. This fellow happens to have palsy very badly. He is very, very sensitive about it. The thing he hates worst to do is to go to any formal banquet. He was invited to attend a banquet in Washington, and as luck would have it, he had to set at the head table. Of course, there, he could be a public spectacle, so he wanted to be careful and try to hide the difficulties entailed by the palsy. He got along very well. It came toward the end of the meal; everything had gone along splendidly. But, the waiter poured him a very full cup of coffee. He didn't know how he was going to negotiate it without making a fool of himself. He reached down; he picked up the cup; he watched an opportunity and when the coast was clear he got it up to his lips, when the lady next to him said: "I beg your pardon, my god man. Have you a match?" Well, he managed to get the cup on the table again, and then reached in his pocket, took out the match and handed it to the woman. He couldn't understand what she wanted a match for.

When the coast was clear again, he reached down for the cup of coffee, and he was just about going to drink it, when she tapped him on the shoulder again: "I beg your pardon, but I forgot to ask you for the cigarette." Down went the cup of coffee. He reached for a cigarette and handed it to her. He then took another match from his pocket and lit it. Then he relaxed a minute. He thought to himself: "She's got the cigarette, the match and the cigarette is lit; the coast is really clear this time."

He reached for the cup of coffee, and just about as he got it up to his lips, the lady tapped him on the shoulder again and said: "Pardon me, but you know, you've been so kind to me, I wonder if you would mind telling me your name?"

He said: "You are an awful itch!"

"My, a Russian! How thrilling!"

[Laughter and Applause]

Now, I am supposed to do this program backwards. So the toasts will come at the end. In order that I be not accused of being long-winded, in addition to being chopped up—I will now take this opportunity to introduce to you the next speaker on the program; Mr. Patrick Kennedy was scheduled to announce the inter-sectional prize paper contest award, but he feels that it would be much finer if Dr. Olney, as Chief Justice, were given that privilege. In deference to his request, I give you Dr. Olney!

Intersectional Contest Awards

Dr. Louis A. Olney: I think most of you are thoroughly familiar with our Prize Paper Contests, but for the few who may not know about them, may I say that a few years ago, these contests were inaugurated, and every year a Committee is appointed from each of the eight sections to prepare technical papers which are presented at our annual contest. At the same time, eight judges are appointed, representing the different sections. These papers are presented, as they were last evening, and the judges consider the value of the papers; as to their scientific value, their practical value, and in other ways. The papers are submitted to them a few weeks before the contest, so that the judges may go over them carefully. The reports are handed to me and up to the present time, with the exception of a member of the press, no one knows what the results will be. Taken as a whole, these papers have been considered exceptionally good this year.

In making this announcement, there is always a note of sadness, because we know a number of groups are going to be disappointed. On the other hand, this is counteracted to a considerable extent because we know there are three groups which will be made very happy.

These papers were all so good and so highly spoken of that the losers should not feel, in any way, the fact that they have not won a prize is detrimental, and I am going to announce these winners in reverse order.

The third prize was won by the Rhode Island Section.

The second prize was won by the Philadelphia Section.

The first prize was won by the New York Section.

I am going to read the names of the Judges representing the Sections:

Northern New England: Henry D. Grimes.

Rhode Island Section: William H. Cady.

New York Section: Emmett J. Driscoll.

Philadelphia Section: Percival Theel.

Sountheastern Section: Curt Mueller.

South-Central Section: J. D. Mosheim.

Piedmont Section: Joseph H. Jones.

The chairmen of the Sectional Committee were:

Northern New England Section: S. F. Sylvester.

Rhode Island Section: Alden D. Nute.

New York Section: Werner Von Bergen.

Philadelphia Section: Miles A. Dahlen.

South Eastern Section: Matthew P. Barnhill.

South Central Section: C. E. Bachelder.

Piedmont Section: Peter S. Gilchrist, Jr.

Mid-West Section: E. J. Siegrist.

Thank you very much! [Applause]

Toastmaster Hamburger: Thank you, Dr. Olney. I know how these sections feel. I have been in the same spot myself. You know, you go to these banquets, and the Toastmaster gets up and he says: "That puts me in mind of a story," and you know darned well it didn't. So I am not going to say that. I am going to tell a few stories, apropos of nothing at all. I had an Irish fellow working for me at one time, and he was quite a boy. He was a bit short-sighted in some of the things he did, but he was a good workman. We had some return steam pipes that were underground and perennially they would rust through and right in the coldest part of winter we would have to dig a ditch across the driveway, put in a new pipe, and fill in the ditch again. Well, Dennis did a good job. I drove in the driveway and forgot about the digging and went right over the bump, bounced up to the top of the car, smashed my hat and ruined my disposition. I then went looking for Dennis and I said to him: "How come you left such a big mess out there in the driveway?"

"Sure, and what happened?"

"I drove in, in my car, and went over the bump, broke my hat, and so forth."

"That's a shame. If I'd known there was going to be that much dirt left over, I'd have dug the hole deeper!" [Laughter]

Now, the next speaker on the program will be our President, William D. Appel. We all know Bill, and we all like him. He has been a hard worker. He has been a generous friend. He is quiet and unassuming. For those who haven't had the pleasure of meeting him and knowing his personality, I just want to put across to you that the AATCC, as he is leaving the Presidency at the end of his term, is losing one of the grandest men who has ever come on the face of this earth!

Bill Appel!

[The audience rose and there was prolonged applause.]

The Future of The AATCC

WILLIAM D. APPEL
President

MR. CHAIRMAN, Fellow Members of the AATCC, and distinguished guests:

In the course of this meeting you have heard the thoughts of many speakers on the past, present and future of the Association. The same thoughts have run through all of these talks and appear again in summary in what I have to say tonight. But, if we have had the same thoughts, perhaps these thoughts are worth emphasizing by repetition.

We stand on high ground this evening for the AATCC has risen to an enviable position of authority and leadership since it was founded in this city twenty-five years ago, following World War I. Looking back, we see a record of steady growth and steadily expanding services to our members, to our industry, and to the public. Every member may be proud of the record. Looking ahead to the problems and opportunities which have emerged from World War II, we see that our accomplishments are merely the foundation for a much stronger and more effective service. I shall speak of the future of the AATCC in a moment.

Many of those who recognized the need for our Association, and did something about it twenty-five years ago, are active in its affairs today. Two of them, whose services and dependable counsel given year after year contributed much to the success of the Association, passed on during 1946. I will ask you to rise for a moment of silence in memory of charter members Robert E. Rose and George A. Moran.

We are deeply indebted to our charter members. I now ask all of them who are here tonight to rise and be recognized by this audience.

One of the unique features of our Association is the participation in its activities of a very large proportion of its members. Most of us know of the devotion to its affairs of such prominent members as President Emeritus Louis A. Olney, Past President William H. Cady, the Olney Medalist for 1946, Past Presidents E. H. Killheffer, P. J. Wood, Alban Eavenson, Carl Z. Draves, and Tom Smith, our faithful Secretary, Harold C. Chapin, our perennial Treasurer, William R. Moorhouse, and the enrgetic Chairman of our Executive Committee on Research, Leonard Little to name only a few. But how many of us appreciate the time and thought given to the Association by the many associates of these men? I will ask all of the men and women, who have served as officers or members of committees, National or Sectional, to rise and be recognized for their valuable services.

Increase in Dues

Since I reported to you in January, action has been taken on several matters of general importance. Foremost is the increase in dues. This action by the Council was taken most reluctantly. It has been delayed long after rising costs have forced other associations to raise their dues. Our action was necessitated by the urgent need for full-time secretarial services. Our secretary keeps the records of more than 5,000 members, receives their dues, and sees that the AMERICAN DYESTUFF REPORTER and the Year Book are sent to them. He is responsible for the material in a large section of the Year Book. He serves as Secretary of the Council, the Nominating Committee, the Olney Medal Committee, and the Research Committee. He operates the Personnel Service and the Merchandise Service. The latter does an annual business of $10,000 in standard samples, testing instruments, and publications of the Association. The growing research program and staff, and the general meetings with increasing attendance and diversity of program require more and more secretarial work. Thus, the burden on the office of the Secretary has become too great for part-time guidance. Only by increasing the income of general funds could we provide the service we need. The loyal response you have already shown to the increase in dues has given the Council assurance to go ahead with its plans. Our dues are even now lower than those of comparable associations.

New Committees

Another development during recent months was the addition of new standing committees of the Council, namely Standing Committees on Appropriations, Conventions, Technical Program, and Constitution and By-Laws. These committees assure competent and thorough consideration of questions in their fields as a basis for Council action.

Research Projects

New major research projects were started during recent months. The theoretical phases of the study of common salt vs. Glauber's salt in textile dyeing, are now under investigation at Lehigh University with funds provided by the International Salt Company. The development of an O.D. No. 7 shade on cotton

having maximum fastness was undertaken for the Office of the Quartermaster General, and research on gas-resistant fabrics and clothing was undertaken for the Chemical Corps. These projects are being financed by contracts with the government. The fundamental approach which is being made to these problems should lead to results of value to the industry, as well as to the military services. Several other major projects are in the making.

Cooperative Efforts

The Association is sponsoring a Commercial Standard on the flammability of clothing textiles in cooperation with the National Retail Dry Goods Association. It is sponsoring a Commercial Standard on insect-proofed fabrics, felts, and yarns, in cooperation with the American Society for Testing Materials and the National Association of Insecticides and Disinfectant Manufacturers, Inc. It sponsored a discussion session on colorimetric standardization of the colors of the Textile Color Card Association of the United States, Inc, standard color cards with that Association, at the meeting of the Inter-Society Color Council last May. The new edition of the Colour Index, to be published jointly with the British Society of Dyers and Colourists, is progressing remarkably well, in spite of the difficulties of communication between the two organizations. These cooperative efforts speak well for the breadth of the Association's interests.

The membership of the Association is growing steadily. Its anticipated income appears to be equal to immediate needs. A well-planned program of committee work and research work is in operation. Our organization has been rounded out for the effective handling of all phases of its activities.

Future Needs

But this is not enough. As we start our second twenty-five years, it is obvious that a large number of potential members do not receive the benefits of the Association, and the Association does not receive the benefits of their participation in its activities. We need more of the younger men with their fresh viewpoints and new techniques. We need more corporate members to support our expanding program of research. It is your responsibility to bring these new members to the association and to tell them of the technical, social, and educational values of membership. New members, individual and corporate, will enable the Association to place more of its committee work in Local Sections and its research projects in qualified institutions in the Sections. That is much to be desired. Our Executive Committee on Research is ready and eager to plan such activities with Local Sections. The chairman of our Research Committee and our Director of Research are prepared to coordinate the work when it is undertaken.

I have indicated the need for a full-time secretary, and what is being done about it.

In the not distant future a full-time Editor will be needed for the publications of the Association, to work under the direction of the Publications Committee. The planning, assembling, and checking of the Year Book is a tremendous undertaking. The editing of the Proceedings, reports of committees, and papers presented at meetings calls for very considerable work. Active continuing effort is needed to bring us the best papers on developments in our field. This work should no longer be left to volunteer and part-time workers. A staff editor should be provided.

In this connection there is an ever-increasing need for coordinating the abstracting of textile chemical literature. Our Association should take the lead in developing such coordination in cooperation with the American Chemical Society, the Textile Research Institute, and similar organizations, in order to obtain prompt and thorough coverage.

It is hardly necessary to say that we must be alert to improve our test methods as new knowledge permits. Our meetings and our research must be geared to the needs of the industry and coordinated with the work of other groups.

I make these concrete suggestions for the future development of the AATCC as an individual member who is conscious of the grave but inspiring responsibility which rests upon our Association. I call on you to do likewise through the representatives of your Section on the National Council. As I have had occasion to point out more than once, the Local Sections run the Association through their Councilors. They need your constructive criticisms and suggestions in order to mold the Association to your needs.

In conclusion I would point out that the need for the services of this Association was never greater than it is today. We now have experience, we have the guidance of the men who have grown up with the Association, and we have a host of able, enthusiastic, cooperative members. To me, the future of the Association seems assured.

It has been a great privilege and honor to serve as your president during these eventful years and I am deeply grateful to all of you for making my job so enjoyable.

Toastmaster Hamburger: Thanks, Bill. And now, here is my third story. A German woman recently lost her husband, and she only had one decent picture of him, a tiny little snapshot. She couldn't very well put the snapshot up on the mantlepiece. So she took it to a local photographer, and upon going into the photographic studio, she said to the man:

"My husband recently died, and this is the only picture I have of him to restore my memory, this small snapshot here. What I would like to know is this. Is it possible for you to please blow this up? It should be a big one."

The photographer looked at it, and said:

"Yes, I can do it. How big do you want it?"

And she indicated to him just so big, so that it would fit on the mantlepiece. He showed her a few different sizes. She selected an eight by ten. She asked when it would be ready, and he said: "Next Thursday." She thanked him very much and started out of the store. When she got to the door, she stopped, turned around and said:

"Just a minute. I happened to think of something. On this picture of my husband, his nose is a little big. Now, his nose wasn't quite as big as it is in the picture. Will you fix it up and take a little of the nose off?"

The photographer thought for a moment, and then said:

"Yes, I guess I can take off some of the nose."

"Thank you very much. Can I still get the picture next Thursday?"

"Yes, you can get it on Thursday."

So she started out the door again, and she got as far as the door, when she stopped and turned around and said:

"Oh, there's one other thing that I happened to think of. His ears, in the picture, they stick out a little bit. Could you maybe move the ears in a little closer to the head?"

The photographer thought a moment and then said:

"Yes, I could move his ears in closer to his head. And it will be ready next Thursday."

So the woman said: "I guess that's everything. Thank you very much." And she started to go out the door, when all of a sudden, she stopped short, turned around and said:

"It just happened to occur to me that most of the time when I knew my husband, he didn't have a hat on. In this picture, he has his hat on. Would it be possible for you to take his hat off?"

The photographer looked at her and said:

"Well, you know, taking off a little

of the nose, and moving the ears in closer—that's all right. But when it comes to taking his hat off, that's more complicated."

Well, the woman said she wasn't interested in the technical terms of what it meant to take the hat off. And the photographer said: "Well, all right. I'll do the best I can. But you can't have it until a week from Thursday."

She said that was all right, and she'd be back then. As she was leaving a thought occurred to the photographer who said to her:

"Madam, on which side did your husband part his hair?"

She was indignant and said: "What do you mean by that? Are you trying to make a fool of me?" When you take his hat off, you'll see! [Laughter]

Our next speaker is a man who, in my personal opinion, has great versatility. It is needless for me to tell you of his accomplishments as a scientist; but, I think it would be advisable for me to call to your attention some of his attributes and his abilities with which, perhaps, you are not as familiar. We frequently hear it said that the scientist is the long-bearded crackpot. He does not answer that description. We rarely hear it said that he is a good executive, yet Dr. Compton has, as a monument to his executive ability, the expanded M. I. T. which exists today, in contrast with what existed almost seventeen years ago, when he assumed the Presidency. In addition to being a good executive, he is a good administrator. That is, also, a rare combination, if you stop to consider it. There are plenty of business executives who are very poor administrators. And, the work which Dr. Compton carried on during the war at M. I. T. and elsewhere throughout this great country of ours also stands as a credit to his great ability and versatility.

Most important, however, is his gracious personality. You only have to call at his office once, to be completely convinced of how great this gracious personality is.

I think that it is the little things that make for greatness in this respect. He is never too busy to see you, or to see any one else. He is generous with his time, and he is generous with the facilities at M. I. T., as we saw this afternoon, when 500-600 accepted his kind invitation to the Open House, to see the laboratories there.

It is my great privilege and pleasure to present to you tonight Dr. Karl Compton, President of M. I. T.

[The audience rose and there was prolonged applause.]

Dr. Karl T. Compton: I should say that on behalf of my colleagues at M. I. T. we were very happy to have so many of you visit our laboratories this afternoon. All of us there are enthusiastic about what we are doing, a bit proud of it, and anxious to have anybody come and see us.

I was also quite proud of the reports of this convention that I have seen in the papers, and from what I have heard, it must have been a very successful Twenty-fifth Anniversary meeting for you.

My topic tonight is nothing that has an immediate and a direct interest to your business. When Mr. Hamburger suggested that I speak on this occasion, I told him there wasn't anything that I could contribute to a group who know a lot more about textiles and dyes and things of that sort than I do. He thought that something different would be all right. So the subject picked out was "Five Atomic Bombs and the Future."

I am going to run through these five bombs, with perhaps a little incident or two connected with each one, and then go on to the future, which I think is much more interesting.

* * * *

Five Atomic Bombs and the Future*

DR. KARL T. COMPTON

President, Massachusetts Institute of Technology

FOLLOWING a few years of the most hectic research involving several thousand of the best scientists of the United States and Great Britain, backed by the full force of several of our country's greatest firms in construction and operation, the first atomic bomb was exploded as an experiment in New Mexico on July 16, 1945. This experiment proved that calculations based upon small-scale laboratory experiments of great variety were sound. It proved also that the United States now had a weapon far surpassing anything in the previous experience of the world and probably far surpassing anything which had ever been imagined as remotely possible a few years earlier.

Use of Bomb Against Japan

The President, advised by the War Department, under Secretary Stimson, made the immediate decision to utilize the atomic bomb against Japan, hoping that one or two of these bombs would deliver the final powerful punch and irrefutable argument which would lead the Japanese to accept the Potsdam surrender terms,—terms which their premier had scorned as not even deserving of reply, and pointing to Japanese increased airplane production as evidence of her ability to continue war successfully.

On August 6 the first bomb was dropped on Hiroshima, and on August 9 the second one on Nagasaki. On August 10 Japan began negotiations for surrender and agreed on August 14 to accept the terms of the Potsdam ultimatum. Thus was brought to final conclusion the most devastating war in history.

There is no doubt in my mind that the use of these two atomic bombs saved hundreds of thousands and perhaps millions of American and Japanese lives, for there is every reason to believe that Japan would otherwise have defended her homeland with the same fanaticism displayed on the bloody islands of Iwo Jima and Okinawa. Some "after the game" strategists have recently deplored this use of the atomic bomb as unnecessary on the grounds that Japan was already a defeated nation. This however is not the opinion of those officers of MacArthur's staff who were planning the November 1st invasion, nor is it borne out by discussions with leading Japanese, both military and civilian.

International Control

After the disclosure of this atomic weapon, the President announced to the nations of the world that it was the hope

* This is an abstract of Dr. Compton's remarks presented at the Annual Banquet.

of this country that further war could be made impossible by appropriate international measures; and he took the lead by inviting the United Nations to devise a workable plan to accomplish this purpose. "It was a dramatic move for our nation, the sole possessor of this revolutionary weapon, to offer to place it at the disposal of the United Nations to assist in the maintenance of world peace, provided the necessary plan and its implementation could be agreed on.

Until such a plan is devised and accepted and put into operation, the United States has no proper alternative for its own security but to continue with its research and development to improve this weapon and to devise both defensive and offensive tactics for its use. Whether we like it or not, this has become an essential part of the program of our armed forces.

Bikini Tests

It was to this end, and also to demonstrate to the world how urgent it is that effective steps be taken promptly in the direction of the President's proposal, that the Bikini tests were primarily designed to give information regarding the possible use and effects of atomic bombs in naval warfare, but they also incorporated many features of interest to air forces and ground forces, and also in every field of science to which knowledge might be secured from the tests. This briefly recapitulates the history to date of five atomic bombs.

The Future

What of the future? We all hope that there will be no military future for the atomic bomb. For the preservation of a decent civilization on the earth, it is important that every nation and every person of influence act with determination to prevent another war. It is important for them to realize that the danger is too tremendous to be trifled with in the interests of international maneuvers for favored position. It is so important that many traditional ideas of sovereignty must be sacrificed, or at least modified, in order to insure the greater benefits of peace and freedom from the fear of future mass destruction.

But there is a bright side to the atomic bomb development. The pressure for this development arising from the war has undoubtedly advanced by many years our command over the enormous forces which reside in the atomic nucleus. These forces may be employed for the benefit of mankind in many ways, along lines in which the ideas are still embryonic, but nevertheless sufficiently clear to justify faith and the expenditure of time and money to achieve them. What are some of these benefits which can reasonably be expected through the peaceful developments of atomic energy?

Benefits of Atomic Energy

The most obvious application, which has already been widely discussed, is the use of some form of uranium pile as a source of heat and mechanical power. There appear to be inescapable limitations which prevent its use in any small, mobile power plant. For a large power plant, however, the present estimates indicate that power may be produced at a cost within economic reason even though this cost may be appreciably higher than the cost of power from coal or oil. If these estimates prove to be sound, such power plants may find use in regions where the cost of transportation of coal or oil is exorbitant, and perhaps in certain other special circumstances.

One attractive possibility lies in the use of atomic energy for the propulsion of ships, because here the unfavorable economic factor may be compensated for by the release of bunker space for useful cargo and also by freedom from dependence on stations for refueling.

In the medical field it is already clear that there will be important uses of the atomic pile to provide in substantial quantities a great variety of radioactive chemical isotopes which can be used for the study of physiological processes and which in some cases will probably find application in therapy. The ground for these applications has already been broken by the use of radioactive isotopes produced in cyclotrons, but the uranium pile will produce these rare substances in amounts many orders of magnitude greater than could possibly be produced by a cyclotron or other high voltage devices for the bombardment and transmutation of chemical elements.

Another application may come from the use of the radiations from these piles or their products to produce new species of living organisms,—of plants, bacteria, ferments, and perhaps even of certain of the lower animals. Here again there is a small background of previous experience on the effects of X-rays and gamma rays in producing new species. In fact some work in California had proved the possibility of producing new plants of agricultural value. Now, however, with the tremendously greater densities of effective radiations available from the fission processes in the uranium piles, such experiments can be carried on far more effectively. I think there is no doubt that there will be valuable contributions to agriculture and food processing. On the medical side there are both good possibilities and dangers in this type of work. It should be possible, for example, to produce beneficial organisms from which medicines like penicillin can be derived, but there may also be produced new strains of disease germs or viruses which are resistant to our present methods of immunization or treatment.

These are only some suggestions of the future peacetime applications of those fundamental discoveries which led to the atomic bomb. Already many university and industrial laboratories throughout the country are organizing new laboratories and teams of scientists and engineers to develop these fields. Some of this work is being supported by funds available to, or raised by, these private institutions, but undoubtedly a large element in the support and the necessary control of these activities will reside in the government agencies like the Manhattan District of the Army Engineers and its successor, the Atomic Energy Committee.

Power of Scientific Research

When it is realized that these developments which terminated a war, which command the attention of the statesmen of the world, and which set the stage for future scientific and industrial activities, all developed out of the very undramatic study of radioactivity by Becquerel just fifty years ago, and when we realize that until very recently practically all of the research in radioactivity was of the most purely scientific character with very little thought of the possibility of practical application, we have a most convincing demonstration of the power of scientific research to discover new territory and to develop important contributions to our civilization which are undreamed of by those who carry through the pioneering work.

* * * *

Toastmaster Hamburger: We are all grateful to you, Dr. Compton, for your conception of what we may expect and what should take place in the future, with the proper control on this atomic energy.

At this time, I want the members who are here from the Chicago Section to stand, please.

On behalf of the assembled multitude, we toast our host, Chicago, 1947! We hope that every one here and a good many more will be able to be present at the 26th Annual Convention of the AATCC in Chicago in 1947, under the auspices of the Mid-West Section.

Before I close this 25th Silver Jubilee Convention, I feel that it is only fair that I give you an opportunity, if you so

desire, to rise and express a vote of confidence to our General Chairman of the Silver Jubilee Convention, George O. Linberg.

[The audience rose, and there was prolonged applause. Whereupon, the Silver Jubilee Convention of the American Association of Textile Chemists and Colorists was adjourned, sine die, at eleven o'clock in the evening.]

—♦ ♦—

Spring Meeting, South Central Section

THE regular spring meeting of the South Central Section was held at the Hotel Patten, Chattanooga, Tennessee, April 12, 1947, with 76 members and guests in attendance.

At the afternoon Technical Session Henry E. Millson of Calco Division of American Cyanamid Company gave a slide illustrated lecture on wool dyeing and affiliated problems. While Mr. Millson's subject dealt primarily with wool, it was of keen interest and benefit to finishers of all types of fibers.

At the business session the Research Committee reported that several projects were under consideration, but no action was taken on a specific problem. They will continue study until a suitable project is selected.

A. J. Kelly was elected to succeed W. E. Reid as Councilor. Mr. Reid has transferred out of this section.

Dr. Seymour was elected to succeed A. J. Kelly as Chairman of the Research Committee.

Dr. Seymour was appointed to direct preparation of the Intersectional Contest Paper.

It was unanimously voted to have a summer outing, provided the Lookout Mountain Hotel can be obtained for it. The summer outing committee was appointed as follows:

Fletcher Kibler, Chairman; Glenn Bellamy, E. V. Helms, John Hardwick, Donald Quick, W. S. McNabb, R. M. Covington, J. A. Crumley, R. J. Quigg, Jr., A. J. Nelson, W. R. Freese, W. K. Newman, Stanley Shultz, P. T. Baxter.

Ladies Activities: Mrs. Fletcher Kibler, Chairman; Mrs. W. R. Freese, Mrs. E. V. Helms.

The banquet speaker was Bert Neihoff, Manager of the Chattanooga Baseball Club.

The next meeting will be held at Hotel Patten, June 7, 1947.

Respectfully submitted,

C. A. SPRATT, *Secretary.*

—♦ ♦—

June 7th Meeting, Southeastern Section

THE Southeastern Section will have a meeting on "Process Water" on June 7 at the Athletic Club, Atlanta, Georgia, at 6:30 p.m.

The program will consist of a round-table discussion of "Process Water." The membership is being polled for pertinent questions on the subject. The questions will be answered by a group of well-qualified experts including Messrs. Weir, de Jarnette, and Averette from the Department of Public Health in Atlanta, M. C. Welker of the American Cyanamid Company, J. S. Kneale of The Permutit Company, W. Douglas Smith of Calgon, Inc., and a representative from The Bristol Company.

These men represent a wide range of experience and "know how" in the production of process water.

Advance registration for the meeting indicates an excellent attendance.

—♦ ♦—

Meeting, New York Section

THE last technical meeting of the New York Section for the 1946-47 season was held on May 2nd at the Swiss Chalet, Rochelle Park, New Jersey. An informal dinner preceded the meeting.

As this was also the annual business meeting of the section, reports were given by the officers and committee chairman. The chairman of the nominating committee, Patrick J. Kennedy, presented the following candidates for re-election:

Chairman—Dr. Herman E. Hager, General Dyestuff Corp.

Vice-Chairman—Charles W. Dorn, J. C. Penney Co.

Treasurer—John H. Hennessey, General Dyestuff Corp.

Secretary—Norman A. Johnson, American Dyestuff Reporter.

Sectional Committee—Patrick J. Kennedy, E. I. duPont de Nemours & Co., Inc.; George L. Baxter—Bradford Dyeing Association; Emmett J. Driscoll—Turner, Halsey Co.

These officers were unanimously elected.

National Council Representatives for 1948 will be elected at the first Fall meeting and committee chairmen will be appointed by the Section Chairman before the first meeting.

The technical program consisted of two papers as follows:

"A New Approach to Coated Fabrics," by David S. Plumb, Assistant Sales Manager of the Vinyl Resins Division of the Monsanto Chemical Company.

"Plastic Film Printing," by Ralph Nelson of the Velveray Corp.

Considerable discussion followed the presentation of these papers.

The attendance was 250.

* * * *

Since the meeting, the Chairman, Dr. Herman E. Hager, has announced the following committee for the Annual Outing and Golf Tournament to be held on June 20th at the North Jersey Country Club:

Chairman—Emmett J. Driscoll.

Golf—H. H. Todebush.

Finance—John H. Hennessey.

Prizes and Entertainment—Paul J. Luck.

Horseshoe Pitching and Tennis—Robert F. Holoch.

Press—Winn W. Chase.

Dinner—Charles W. Dorn.

Prize Awards—Emmett J. Driscoll.

Respectfully submitted,

NORMAN A. JOHNSON, *Secretary.*

MEMBERSHIP on MAY 1, 1947

Section	Senior	Junior	Associate	Student	Total 1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937
Northern New England	449	35	72	0	556	528	469	402	407	398	391	349	327	311	303
Rhode Island	427	24	39	11	501	471	405	348	352	341	337	332	295	284	256
New York	1046	67	147	2	1262	1167	1008	817	707	651	606	538	483	451	409
Philadelphia	724	32	76	1	833	740	644	550	513	517	475	447	381	369	326
Piedmont	425	16	45	6	492	434	366	326	286	309	297	293	277	247	238
South Central	91	4	7	0	102	100	87	83	72	80	71	61	63	56	41
Southeastern	147	6	23	22	198	166	141	141	146	175	142	137	133	109	55
Mid-West	271	10	45	0	326	287	261	209	198	194	193	180	157	158	147
Student Sections				142	142	50	14	20	56	117	80	59	51	57	41
Unclassified	207	17	52	0	286	237	199	151	122	82	87	80	71	65	55
	3787	211	516	184	4698	4180	3594	3047	2859	2864	2679	2476	2238	2107	1871
Corporate members					299	302	299	184	82	77	33	33	32	30	30
				Totals,	4997	4482	3893	3231	2941	2941	2712	2509	2270	2137	1901

Industrial and Apparel Leathers*

HAROLD B. WHITING
A. C. Lawrence Leather Co.

LEATHER manufacture as an art is extremely old. Well preserved specimens of leather from ancient Egypt bear testimony to the high state of development of the art over three thousand years ago. The tanning and coloring action of leaves, barks and woods were probably accidental discoveries of a prehistoric age. Secrecy and lack of accurate records make it difficult to follow the evolution of the art, but we do know that leather has been an indispensible item to man throughout history, and is necessary to modern civilization in the form of shoes, clothing, harness, belting, and countless other useful articles.

Leather making has as its object the treatment of animal skins with a tanning agent whereby the resulting product possesses qualities which are quite different from those of the original skin. The moist skin which has been removed from the animal's carcass is quickly decomposed by bacterial enzymes; it is rapidly dissolved by warm water, and if dried out it becomes hard and of little use, but when properly tanned the skin is practically impervious to digestion by enzymes, it is insoluble in water, and may be given whatever degree of softness is desired.

Structure of Skin

Since animal skin is the basis of leather, some knowledge of its intricate structure and complex chemical composition is essential to an appreciation of the extremely complicated reactions involved in making leather.

Anatomically a skin may be divided into three distinct and superimposed layers; flesh, corium or derma, and epidermis. When the skin is flayed or removed from the carcass, part of the tissue by which it is held in place, is removed together with some fat, muscle, blood vessels and the like. All these tissues are called flesh and must be removed from the skin during its preparation for tanning by the operation known as fleshing, otherwise the diffusion of tanning and other materials into the skin will be impeded. The derma or true skin constitutes the leather-making material of the skin, since both flesh and epidermis will have been removed prior to tanning. The derma may be divided into an upper and a lower portion. The upper part contains glands, muscles, and hair follicles, while the lower part is made up of interlacing fibers of collagen which present a net-like appearance, together with a smaller amount of elastin. The epidermis or outer layer of the skin is largely composed of keratin, which has no leather forming value and is dissolved or softened sufficiently in a preliminary treatment to enable it, together with the hair, to be removed by mechanical means.

The principal chemical constituents of skin are proteins, fats and related substances, and water, together with the small quantities of carbohydrates and inorganic salts. About 90 per cent of the solid matter of the skin consists of proteins. Those of greatest importance to the tanner are collagen, elastin and keratin, and are fibrous in nature, while the albumins and globulins are of the globular or corpuscular or jelly-like type and do not have leather forming properties. The globular proteins are in general soluble, and the fibrous proteins are insoluble in water or dilute aqueous systems. These fibrous proteins are extremely complex bodies built up of many amino acids bound together into very long polypeptide chains. These elementary fibers are bound together longitudinally by primary and secondary valency forces. Through the unbound amino or carboxylic groups present in the side chains, these fibers exhibit acid or basic qualities and enter into typical reactions with acids, bases, salts and heavy metals.

Curing

As soon as a skin is removed from the animal carcass, it begins to undergo bacterial and other degenerative changes. To arrest, or at any rate to reduce, these changes which may greatly affect the value of the skins, they are subjected as promptly as possible to some sort of curing process. This may consist of treating with common salt and allowing it to remain in a pile or pack for three or four weeks during which time the skin will have lost water and some soluble proteins and picked up salt. After such a treatment skins may be stored for some time if kept in a cool area. In certain foreign countries where salt is expensive, the skins may be air dried without salting. This is a much less desirable method of curing since some decomposition usually takes place before the skin is completely dried. Sometimes the skins are first salted and then dried. In any case the skin as the tanner receives it, is in a most unattractive condition, being contaminated with blood, manure, dirt and many types of bacteria.

Tannery Processes

The first tannery process given the cured hide is soaking in water. This rehydrates the skin proteins, dissolves and removes undesirable proteins, opens up the contracted fibrous structure, and removes curing salt and surface dirt. Because of the large numbers of destructive bacteria present in soak waters, this operation presents bacteriological as well as chemical problems.

In general, hides or skins after being properly soaked, are placed in an unhairing solution consisting principally of hydrated lime and water. During this process the alkali reacts with the keratinous proteins of the hair and epidermis, causing definite degradation of these substances. At the stage where the hair slips satisfactorily, the skins are taken out, and the hair, epidermis, flesh fat and surface muscles are removed mechanically. The alkali has caused the skin to become slightly swollen. Many centuries ago it was discovered that if such a swollen skin were treated with an infusion of fowl or dog dung prior to tanning, certain desirable characteristics were found in the finished leather. These characteristics were lacking if this weird treatment was omitted. The leather properties imparted by this process, called bating, cannot even today be expressed by numerical values; they cannot be adequately described in words, and it is difficult to describe them by microscopic means. The experienced leather man knows them by the smoothness and silkiness of the grain, and a certain desirable feel of the leather which has been bated. Until about 40 years ago, bating was performed entirely with manure.

*Presented at meeting, Northern New England Section, January 17, 1947.

About that time J. T. Wood established that the essential principle of the manure bate was the proteolytic or protein dissolving enzymes which it contained. This finding led to the manufacture of synthetic bates which consist of the enzyme from bacteria, fungi or pancreatic extract, together with a suitable absorbent material. There have been many theories advanced as to just what is accomplished by bating, and the subject is a controversial one. It seems probable that the chief result is the removal of a large part of the inter-fibrillary protein.

The extent to which this process is carried out determines to a large degree the properties of the finished leather. Skins that are to be made into soft leather are heavily bated, and those to be made into firm, long wearing leather like sole leather, usually have a relatively light bating.

The use for which a leather is intended, determines the tanning method to be used. Sole and belting leathers are vegetable tanned, while garment and upper leathers are usually chrome tanned. In the case of sole, belting and strap leathers, the heavier, thicker hides are used, which after bating are placed in a very weak tannin solution. This tan liquor is gradually increased in strength until after days or weeks, the hide has absorbed sufficient tanning and other materials to give it the desired properties. After tanning, the hides are treated with a suitable oil to give the requisite flexibility and tensile strength.

In the case of shoe upper and garment leathers which are to be chrome tanned, the skins after bating are pickled by treating with a solution containing sodium chloride and sulfuric acid. The acid rapidly combines with the skin protein, while the salt suppresses the swelling which would otherwise be excessive and undesirable. The function of pickling is to bring the skin into a uniform physical and chemical condition, and prevents too rapid combination of the chrome tanning compound and the skin protein. The pickled skin is agitated with a solution of basic chromium sulfate until it is considered tanned. Such leathers are characterized by a light blue color and by their toughness. They have less body, more stretch and greater resistance to heat and wetting than vegetable tanned leathers.

Dyeing

After washing to remove spent tan liquor, and partly neutralizing to reduce the acidity, the skins may be dyed any desired color by use of the ordinary dyestuffs. Chrome tanned leather may be dyed directly by acid and direct dyes, while vegetable tanned leather can be dyed directly with basic dyes. Basic dyes may be used on chrome leather if it is given a mordant with a vegetable tanning material. The technique of leather dyeing is quite different from that used on textiles. The material itself imposes several limitations. First, its character is adversely affected by excessive heat. It is not considered good practice to heat even the most heat resistant leathers to more than 150° F. during dyeing. Second, the amount of mineral acid must be maintained within rather close limits to retain the desired properties of the leather. This means careful selection of dyestuffs in order to get uniform dyeing. Acid and direct dyes are usually exhausted by the addition of formic acid to the dye bath. If the dye penetrated the body of all leathers completely and uniformly, a straight weight basis would be applicable. If the dye only colored the surface, a straight area basis would be satisfactory. Neither of these conditions, however, holds, and most dye formulas are subject to adjustment as the type or source of raw skins or their processing varies.

Lubricating

Leather fibers are naturally somewhat brittle and tender unless they are properly lubricated. This lubricating process is called fat liquoring. Fat liquors are usually applied after dyeing and rinsing. For this operation the pH of the leather must be controlled within rather narrow limits, and balanced against the stability of the fat liquor emulsion, otherwise satisfactory results will not be obtained. The quantity and type of oil or fat used, depends on the nature of the original skins, the preceding processes, and the use for which the leather is intended. Sulfonated or unsulfonated neat's foot, fish, vegetable and mineral oils are extensively used.

Drying

After fat liquoring, the excess water is removed and the skin smoothed and shaped by setting out. This operation is usually performed on a machine having a roll with blunt spiral blades which rub against the skin. The skins in this condition contain about 50 per cent moisture and are ready for drying. Leather is usually dried by hanging in a batch or a conveyor dryer in which the air is circulated by fans and the proper temperature and relative humidity are maintained by suitable controlling instruments. During drying the removal of water is accompanied by a shrinking and a sticking together of the fibers. This makes the leather somewhat hard and stiff. If at this point the leather is dampened to about 34 per cent moisture, it can be softened by stretching and flexing, an operation known as staking. On redrying it retains its softness and flexibility.

Finishing

The finishing of leather makes it more attractive and more serviceable. The first finishes were milk, ox blood, and egg white. By coating the grain surface of the leather with milk or egg white, allowing it to dry and then rubbing it, a pleasing luster was obtained. Later casein and albumen were added to shellac, waxes, and many other materials. It was found that inert mineral pigments could be ground in aqueous solutions and would serve to hide minor defects in the surface of the leather. With the development of plastics, these materials were soon made available in finishes and are in wide use today.

Specialties

There are many variations of the processes described, and some of the leather specialties are quite interesting. Chamois, for example, is made from the flesh split of a sheepskin that is tanned with oil. In this process the pickled skin is plumped by washing in fresh water and then split into a grain layer called a skiver, and a flesh layer called a flesher. After suitable repickling, the fleshers are impregnated with cod or other fish oils, and slowly dried. During the drying, the flesher is re-oiled several times and then the oil is allowed to oxidize. It is during this oxidizing process that the tanning takes place. As soon as the oxidation is completed, the skins are washed with alkali to remove the oxidized oil, and after squeezing out excess wash water are hung up to dry. The dried skins are then softened by tumbling, and buffed by holding against an emery coated wheel. They are then ready to be cut into pieces of suitable size and shape for selling. Properly tanned chamois has the property of absorbing many times its weight of water and of not leaving any lint on polished surfaces. These unique properties make it of great value to professional window washers and adapt it to many household cleaning jobs.

For the past ten years my work has been intimately associated with our shearling department. A shearling to a tanner is the skin of a sheep which has been killed soon after shearing, and whose wool has not grown to sufficient length, usually one and one-half inches, to make it of value to the wool puller. After the packer has skinned the sheep, he salts the skin for about ten days and then ships it to the tanner in what is known as a green salted condition. If the tanner finds it necessary to store these skins for a time, they are usually dried since the presence of the wool has made good curing difficult and the skins are subject to rather rapid decomposition. I have here a skin typical of this condition. This skin has had the head, shanks and brisket trimmed prior

to drying. After suitable soaking, fleshing and scouring, the skins are then pickled and are ready for tanning. In tanning most kinds of grain leather, the tanner tries to make the leather as thick or plump as possible, since these skins are more in demand and command a better price. However, in the case of shearlings that are to be used in garments, light, thin leather is more suitable, so the tanner uses a process to give this result. This he does by giving it less tanning, usually with chromium and aluminum compounds, and by avoiding astringent liquors that might cause the grain to shrink or draw. After tanning, the skins are treated with an oil emulsion to impart the necessary softness, and are dried. Following drying they are dampened, staked or stretched, and the wool is combed, and clipped to uniform length.

This skin is representative of one that has received these operations. Such skins are widely used for garment linings, mittens, slippers, and after suitable dyeing for coat collars and similar articles. These skins, however, at best present the dull and characteristic appearance of wool fibers. For many years men have tried to make them look like fur, but the dull kinky fibers were not easy to change. The outstanding difference between a fur fiber and wool fiber is straightness, and luster or lack of scales on the fur fibers. For some time calendaring had produced a straightening and lustering of the fibers which gave an improved appearance, but on exposure to moisture the fibers reverted to their original dull, kinky condition. Recently there has been produced one of the most spectacular developments that the leather industry has ever seen. I refer, of course, to mouton. By mouton, I mean a sheepskin tanned with the wool on it, whose wool has been suitably dyed and permanently straightened, and lustered for at least one quarter of its length. This gives a skin a very pleasing appearance, as you can see from these samples. This result is attained by the repeated application of suitable chemicals to the fibers, followed by a calendaring or ironing at a relatively high temperature. The steam softens the fibers while the hot calendering stretches, straightens and dries them, which at the same time mechanically removes some of the cortical scales, thus improving the luster. Fibers in this condition are reacted with formaldehyde, which sufficiently hardens them so that they are subsequently unaffected by moisture. The treated ends of such fibers closely resemble those of certain furs, and in most cases have better resistance to wear. I am sure all of you who have teen age daughters are familiar with the tremendous popularity of this material this winter.

While the descriptions I have given you tonight are necessarily over-simplified, you have possibly gained a better understanding of a complex art which presents many unanswered questions. Protein chemistry is one of the most difficult and complex branches of organic chemistry, so much so that while new tools are steadily gaining us a better understanding of the collagen molecule, we are not yet certain of its molecular structure. Is it any wonder then that to some of us there are times when the grass looks greener in the other fellow's yard?

Discussion

Question: What about substitute leathers?

Mr. Whiting: Well, of course, leather is useful because of its properties. It has many properties which cannot be duplicated in any other material. There are, of course, some substitutes for leather.

To some extent, rubber was used as a sole material during the war, and it does have better resistance to abrasion than leather. However, it lacks some of the properties which most of us like in a soling material.

Personally, I prefer rubber heels to leather ones, and to that extent, I use a leather substitute. But, in general, I think the materials that have been used as substitutes have failed to come up to leather in its properties.

Plastic-coated fabrics have been used for garments, but I am sure none of you would care to wear one of the garments for any length of time.

In the patent leather field, plastic-coated fabrics have been used extensively for ladies handbags, and to some extent they are forcing patent leather out, but they probably will not be used for shoes until some entirely different fabric is developed, because the fabrics will not stand lasting or pulling over a last.

I might say this, too, that it seems to me that for almost every good article that is made, some one comes along who makes a poorer article and sells it for less money. That is the way I feel about most leather substitutes. I don't say they won't come along. But, bear in mind that leather is made from a by-product. The supply of hides is limited by the demand for meat. As plastics come in, or substitutes come in and replace leather for certain purposes, there will be more leather for other uses, thus lowering the price and increasing the availability in fields where it has not been used because of price.

Question: How about the dyeing of those skins over there [referring to the skins on display]?

Mr. Whiting: Those skins were dyed with acid dyes, but there are only a few dyes that will work, because we are limited in the temperatures to which we can heat the skins. Those skins were dyed at 150° F.

Fortunately, our requirements for fastness on skins are not nearly as rigorous as for most textiles. You see, a skin like that is rarely subjected to direct sunlight.

Question: How about this red one?

Mr. Whiting: That is what we call a rug skin. The wool is about 1-½ inches long. Those skins are usually used for rugs on bedroom floors.

Question: Do you give those skins the same treatment as you give when using the regular fur dyes?

Mr. Whiting: No; those rug skins are dyed directly with acid dyes. Our mouton skins are dyed with fur dyes, which are oxidation type colors. These are dyed with hydrogen peroxide added to the dye bath.

I have brought with me a skin, before dyeing, which has already had the conversion treatment; that is, the fibers have been straightened and lustered. It has suffered somewhat from folding and transportation, but it has all the feel and luster of the finished skin, without the color.

Question: It has a far better luster than the other one had?

Mr. Whiting: Yes, because the skin on my left hasn't had any ironing, as we call it. The fibers have not been straightened; they are just as they came from the tan vat. The fibers on this skin have been straightened, possibly a third or a quarter of their length, by the calendaring action.

Question: How high a temperature can you use, when you are drying the skins?

Mr. Whiting: Usually we don't go much over 120° F. It is possible to produce very hard leather by excessively fast drying, and it is difficult to bring them back to a suitable, soft condition.

Question: It must take a long while to dry them?

Mr. Whiting: Yes, it does. Even under the best conditions, probably four hours would be an absolute minimum. From there, it runs up to twelve, depending upon the type of skin. Sole leather drying must be done more slowly because during the drying process, the water migrates from the center of the skin to the surface, because of a differential in the amount of water there, and if the drying is taking place too rapidly, the travel of water from the center to the surface is so rapid, it carries along with it certain tanning and non-tanning materials, which produces an undesirable brittleness.

Question: Do I understand that phenol and formaldehyde resins are used in some of the finishes?

Mr. Whiting: Do you mean on grain leather finishes?

Question: On this coating here [indicating]?

Mr. Whiting: I would say only to a very limited extent. I would say that the methacrylate resins are more generally used.

They are usually applied as a water dispersion.

Question: Are some sole leathers treated with resins to resist abrasion?

Mr. Whiting: Yes. During the war, when the best sole leather, of course, was going into army shoes, work was done on improving the wear or abrasion resistance of sole leather, for civilian and also for Army use. It was found that the addition of small amounts of oil over and above the usual amount produced about the best effect. A great deal of work was done on impregnating the soles with various materials, and so far as I know, little of it was of any great value. If enough resin was put into the sole to improve very markedly the abrasion resistance, the sole was stiff and subject to cracking. If the resin that was applied was a softer one to improve the flexibility, it was somewhat tacky and it was unsatisfactory from that standpoint. As far as I know, that program has been dropped.

Question: Has any work been done on improving the abrasion resistance by modifying the mechanical properties of the leather?

Mr. Whiting: Yes, to a certain extent. That is, sole leather is always pressed or rolled and made more compact, but probably the best way of improving the abrasion resistance of any sole leather is by tanning properly.

Question: In the original mouton, was there a patent on it? I have heard the patent covered the use of formaldehyde resins; then the tanners found they could do as well without the urea.

Mr. Whiting: Yes, that is substantially so. I believe there was one patent in this country which involved the use of metacresol and formaldehyde, and attracted quite a lot of attention. I believe many processors of mouton have been able to produce it now without the use of metacresol.

Question: On the mouton, is there some wax or watery compound or something to build up the wool, when it is wet?

Mr. Whiting: If I understand your question correctly, you are asking if anything has been applied to improve the water repellency.

Question: That is right.

Mr. Whiting: That may be so, in some cases. In the skins you see tonight, no.

Question: They will stand water?

Mr. Whiting: They are not water proof in any sense; the fibers have simply been stretched and that stretch has been made permanent by the use of formaldehyde.

Question: Has thioglycollic acid been used at all?

Mr. Whiting: No.

Question: What type of machinery can you use around a tannery to save the obviously limited hand labor?

Mr. Whiting: The tanner has a difficult problem. No two skins are exactly the same size or shape. He is confined largely to batch operations. He soaks his skins in ordinary open vats, and tubs, sometimes called, and agitation is secured by means of paddles, dipping below the surface of the liquor. As far as removing the hair or the flesh is concerned, he uses machines which are probably like nothing that you have ever seen. They consist of squeeze rolls which serve to withdraw the skin, and which at the same time engages the skin in a revolving, spiral bladed roll which presses against the skin to scrape off the hair and fat.

The tanning of leather is usually done in large, wooden drums about five or six feet from head to head, and about eight or nine feet in diameter, supported on posts, and the liquors are fed through hollow gudgeons. Drying is usually done by hanging from hooks, either in a room where the hooks are suspended from the ceiling, or on a conveyor belt, or the skins may be thrown over sticks on a conveyor belt.

Finishing is done by spraying the finish suspension, which is then dried on a conveyor through which heated air is circulated.

The leather-maker uses many operations, and his leather is subjected to many variations in the operations to produce the desired properties in the finished leather.

Question: You have made many references to the feel or the handle of the leathers, and the qualities of the leather. In a large-scale production, how do you determine the qualities of proper operation?

Mr. Whiting: Well, we have an operation which is called finish grading on all leathers. To be a finish grader, requires considerable training. The man is trained on a particular type of leather. He may know how to grade and finish certain types of sheepskins, calfskins, side leather, or mouton, for instance, and he judges the skin by the surface appearance, freedom from the customary defects, by the color — is the leather too stiff or too soft? Are there holes in it? And things of that sort. Does that answer your question?

Question: The other phase of it is this. How far have you gone in instrumentation and testing the qualities of leather?

Mr. Whiting: As far as control is concerned, considerable work has been done, although it seems when we really look at the situation, a small amount at that. During the war, of course, we had to work under the usual government specifications, and we ran tensile strength determinations, oil analyses and so forth. But, in general, a leather buyer is not interested in physical properties of the leather, other than that the leather must pass manufacturing requirements.

Question: Has any work been done in using the repeated stress loading, on the diagram, to indicate performance?

Mr. Whiting: Not so far as I know; not as a production control method.

Question: As a development method?

Mr. Whiting: No, not as a development method, either, so far as I know.

Question: I have heard of an occasional case of anthrax. Is this a source of danger in the leather working industry?

Mr. Whiting: Well, of course, anthrax is a dreaded disease. Our plant physician, who is retiring after thirty-five years with us, tells me he has never seen a case positively identified as anthrax, although I know there have been several cases and some deaths in Essex County, from anthrax. As you know, probably, it is the disease the animals contract, on the range and it is usually very quickly fatal. It comes to the tanner through the skins which are moved from these animals which have died in the field. To my surprise, I find there are areas in this country which are considered by the Bureau of Animal Industry to be infected with anthrax. Hides and skins from those areas possibly may be affected with the germs. There has been no satisfactory method of sterilization of these skins, because any method which would kill the anthrax germs, or spores, which are quite resistant, would damage the leather beyond any possible use.

So we feel that good sanitation — I believe the State Department of Public Health has some requirements as to the wash bowls and working conditions on that — and proper disposal of sewerage are about as far as we can go.

Question: Do they use mercury compounds at all?

Mr. Whiting: Mercury has been used, but unfortunately it turns the leather very black and makes it unsuitable for most uses.

Question: Even in the organic combinations?

Mr. Whiting: Yes; most of those organic combinations are as bad as anthrax, as far as handling the skins is concerned.

The Chairman: Mr. Whiting, you referred to standard conditions in connection with the government, in testing the leathers. As we know it, at least our branch of the textile industry, we call standard conditions 65 per cent relative humidity and 70° F. Our material picks up a certain amount of moisture at those conditions.

Mr. Whiting: We use the same conditions.

Question: How about the moisture content of leather at those conditions?

Mr. Whiting: That would vary between wide limits, depending upon how much

salt, glycerine, Glauber's salt or whatever else might be in the leather.

Question: You also said that when retaining requisite strength, you make use of certain oils. Does that mean that you, with the aid of the oil, retain the strength, or do they build up the strength, or just what is the point there?

Mr. Whiting: They increase the strength. In other words, they allow the fibers to slip on each other, instead of tearing apart. Does that answer your question?

Question: Yes. Will you give us an idea of the moisture content, the variation on average leather of various types?

Mr. Whiting: Under normal conditions from 10 to 15 per cent, I would say, in average leathers.

Question: You spoke of leather-making as an art. What progress has been made scientifically?

Mr. Whiting: Well, scientific progress in the leather industry began thirty years ago. We got off to a rather late start, and there was a great deal to be done, as I have already told you. The industry has done a great deal of good work, but much more remains to be done. A great deal of work has also been done by the suppliers. The Rohm & Hass Company has done outstanding work. They were the first to furnish synthetic tanning material to replace vegetable tanning materials, which are becoming increasingly scarce and expensive. A great deal remains to be done, technically, in the leather industry, both with respect to control work, and also developing new properties, or more desirable properties in our leathers.

Question: Do they use much glucose now in making sole leather?

Mr. Whiting: I would say the proper use of glucose and other loading materials will increase the yield of sole leather by about 10 per cent. Those materials don't however, increase the abrasion resistance and to that extent possibly are a bit misleading.

Question: The reason I ask is that I had a pair of shoes, and whenever I wore them on a damp day, they picked up the moisture. The shoemaker claimed they were treated with glucose, and he showed me by microscopic pinholes that they were sucking the water into the shoes.

Mr. Whiting: I don't know about that.

Question: Whatever become of that electrical treatment of tanning leather they were pushing around?

Mr. Whiting: You are talking about the process of causing migration of tanning material by electricity. As far as I know, that never proved to be of practical value. The tanner has had many such schemes demonstrated to him, and usually they don't work.

A Short Method For Control of Finished Weights*

FREDERIC A. PRISLEY

Director of Research, Watson-Park Company, Boston, Mass.

THE method described here was the result of a trouble shooting assignment which barely came within the scope of ordinary mill laboratory activity.

The situation was that very frequently sample pieces and yardages finished either heavier or lighter than the layout specified. It was true that day to day production also varied from specific weights, and this was controlled fairly well, but by the rather inexact method of changing the filling whenever a certain style showed a trend away from normal. At the best it was a rule of thumb device, but it would have been considered adequate until the sample weight variance situation brought the whole subject into focus. One great failure of such methods is that after a few arbitrary adjustments you often find yourself working in the wrong direction and in the case of the samples, I believe was largely responsible for some of the really extreme variations which we found.

However, weights of the sample pieces were very important, because if a sample was to be 13 ounces the mill could not very well send it in to the selling house at 12.7 oz. Conversely, if it weighed 13.3 or 13.4 ozs. it could not be submitted because the customer would immediately recognize superior quality at the price and the mill could not afford to deliver. At 10 to 15 cents per oz., .3 of an oz. per yard represented an appreciable amount over the cost sheet.

When the production people finally became desperate, the laboratory was called upon to diagnose the trouble.

It was soon determined that the picks, ends, and all finishing data agreed with the layouts. The yarns were then subjected to scrutiny and it didn't take long to decide that in most cases they were off count to just about the extent the sample was heavy or light. Further investigation brought out one outstanding fact: that the yarns were off count because of moisture variation when they were spun.

The solution was then stated as the very simple one of spinning the yarns to count at standard regains. This was not too simple, however, to bring about. The laboratory conditioning oven had given us the data, but it didn't look like an instrument that would help the spinning room section hands to any extent. At this point very careful consideration was given to the idea of storing a few spools of each lot of roving in a conditioned room and determining the draft gear for a given count by weighing yarn from these. There were obvious objections to this but it was the best idea up to then.

By a very happy coincidence, there came to our attention just then a new device for drying, which when studied proved to be capable of drying a small skein of single yarn to bone dry weight in about four minutes. It was the now very common hair dryer type, designed to determine moisture in foundry sand, but a very useful tool for our purposes.

A great deal of thought and experimentation led to a trial of the following procedure which involved a routine about as follows :

The spinner before starting a lot of roving on the frames would make 7 half bobbins from as many spools of roving selected at random. This number, incidentally, was determined by statistical analysis of the 200 bobbins in a doff of yarn of average count. He would use a normal draft gear for the count he was about to spin and indicate the gear on the form which went with the bobbins to a small lab set up in the yarn mill.

An operator then reeled a 40 yd. skein and got the "as is" count. Then she dried it four minutes in the dryer or "moisture teller", to give its proper name. She then weighed the yarn immediately, using a yarn numbering quadrant, which gave the bone dry count before the skein picked up any appreciable moisture.

If 9% was the standard regain at that particular season, the bone dry count was divided by 1.1, which gave a factor which was then used to determine the correct draft gear. The form was filled in with this data and returned to the spinner who changed the draft gear to the teeth indicated and proceeded to spin.

The results really exceeded expectations, and definitely confirmed the theory. That is, if the yarns were on count at 9% regain, the cloth would be the correct weight at 9% regain. All other factors were shown to be under very good control, and once the moisture variable was controlled, very small and infrequent variation was encountered.

The procedure was finally set up as routine for all yarns, and resulted in savings which made the cost of the operation a very profitable investment.

*Presented at meeting, Northern New England Section, March 21, 1947.

Flammable Fabrics and their Evaluation*

DR. F. BONNET
American Viscose Corp.

FLAMMABLE fabrics which we are to discuss tonight are those which easily ignite, then burn so rapidly that they constitute a dangerous personal hazard when used in clothing. We all know, of course, that our ordinary wearing apparel will burn, especially that which is made of cellulosic materials. We also know, when we stop to think about it, that some fabrics will burn faster than others which unfortunately is all too often overlooked. Let me cite several cases of flammable fabrics in illustration. About 4 years ago in Kansas City, Miss Martha M. Gross, a stenographer, typist and secretary was severely burned when in striking a match to light the gas stove, the head flew off and ignited the angora type sweater with long fuzzy nap, which she was wearing. The burning was so rapid and intense that she could not beat out the flames nor could the sweater be removed with the help of her sister and brother-in-law (both of whom were also quite badly burned) before serious injury had been done. She was not only disfigured but the accident hinders the full use of her hands for the rest of her life.

Then there was the case of Miss Georgia Stevens, an 18 year old University of Texas coed whose filmy dress caught fire when it brushed against a lighted candle during a sorority initiation and burned so rapidly that she died of her burns the following morning.

As a third example of flammable fabrics, I would cite the case of Doris E. Deffebach who was severely burned when her chenille lounging robe caught fire. She sued the department store for $50,000 damages, and the U. S. Court of Appeals ruled that "since outer garments, intended for domestic wear are not unlikely to come into momentary contact with lighted matches, tobacco or stoves, it seems to us clear that a robe which, when this contact occurs, instantly bursts into flame and inflicts severe injury, is unreasonably dangerous and unfit for use." This opinion was later upheld by the U. S. Supreme Court.

These three examples have been chosen (and many more could be cited) to represent three types of fabric. The first case was a long napped, brushed or pile rayon fabric; the second was a delicate fine mesh, probably a net fabric made of rayon or cotton; and the third was a tufted cotton fabric. In each case the air had ready access to the fibers or fine sized yarn, when once they had become ignited. The third example was also chosen because it brings out the responsibility of merchants, under warranty, in selling dangerous merchandise.

Now it is nothing particularly new that people suffer injury when their clothing takes fire. About 34 years ago, in 1913, England passed a law concerning flammable fabrics, after long napped cotton flannel had caused the death of several children. This act made it "unlawful to sell or have in possession for sale any fabric either in the piece or made into garments to which is attributed expressly or inferentially the quality of non-inflammability or safety from fire unless such textile fabric conforms to such standard of non-inflammability as may be prescribed by the regulations to be made by the Secretary of State." In other words, if fabrics or garments are flammable they must be so labeled. If not marked, "inferentially" they are not flammable and therefore safe.

Recent Legislation

What started legislation recently about flammable fabrics in this country was the indignation of a California mother when she found a tag on a chenille dressing gown purchased for her small daughter, advising that the garment be kept away from open fires. This roused her indignation that such dangerous materials should be allowed to be sold, and resulted in a Bill being introduced into the California legislature making it "unlawful to manufacture, sell or offer for sale any article of wearing apparel, cloth, drapery, etc. or which contain any hazardous explosives or other substances in sufficient quantity so as to make such fabrics more highly flammable than cotton cloth in its natural state." The Bill went even further and included any toys or tools designed for use in the household containing hazardous substances.

Unfortunately, comparing the flammability of fabrics to "cotton cloth in its natural state" is too vague and uncertain to make such an act enforceable. However, in an amended form, this Bill was signed by Governor Warren in June 1945 and included fabrics and garments made of either natural or "synthetic" fibers which would prove to be flammable by tests to be made by the State Fire marshal.

Reliable Test Method

What was urgently needed was a reliable testing method by means of which the rate of burning of any fabric could accurately be measured and determined. Having determined the relative rates of burning, it would then be possible to decide which fabrics burn so rapidly that they should be considered a definite fire hazard, especially when used in garments and should be outlawed. Realizing not only the need of a testing method but also that one should be obtained as soon as possible as both state and national legislation were pressing, Dr. Olney, chairman of the AATCC Research Committee, appointed a committee to investigate the matter with Dr. H. E. Hager as chairman, shortly after the original Fabrics Flammability Bill was introduced into the California Legislature on January 1945. The result of the committee's work is shown here tonight and will be demonstrated by Cameron Baker of the U. S. Testing Co. a little later on.

In developing any new test method much thought must be given to many details and many check tests must be made.

1.—In developing this AATCC fabric flammability tester, one of the first considerations was whether a flame or the radiant heat of a glowing wire should be used as the source of ignition. A flame was decided upon as this seemed to be the most common cause of fabric ignition. In many reports of accidents, a glowing cigarette is blamed for setting fabrics afire, but the committee was never able to get ignition even of delicate fabrics when exposed to the glowing end of a cigarette.

2.—Another question which arose was whether the sample should be tested in a vertical, a horizontal or some other position. Tests showed that in the vertical

*Presented at meeting, Philadelphia Section, April 11, 1947.

position, almost all samples burned so rapidly that it was difficult, if not impossible, to determine a difference in the rate of burning. Horizontal tests on the other hand were rather slow burning and did not give proper results with tufted fabrics, which seemed to burn at about the normal rate of the backing cloth, and tufted and chenille types of fabric were known to be dangerously flammable. A compromise, 45° angle, i.e., half way between the horizontal and vertical method of testing was therefore chosen as it gave a good rate of burning, yet made it quite possible to measure the different rates of burning.

3.—The next question was the size and kind of flame to use as many accidents seemed to have been caused from the flame of a match, so a flame about ⅝" in length was chosen.

4.—To get a uniform flame intensity, C. P. Butane, which can now be readily obtained in small cylinders at nominal cost, was chosen as giving a uniform intensity of heat for ignition.

5.—Having decided on a testing flame, its kind and length, the next question was how long a time should the test flame be left in contact with the sample? Using a piece of 80 square cotton sheeting, which, of course, will burn but which cannot be considered flammable, was chosen as a standard in determining the time of flame contact. If the Butane Flame is allowed to impinge on a duly dried and prepared sample of this sheeting for one second, it will be scorched at the point of flame contact but not be set on fire, and samples under test would thus be exposed to the same heat intensity for the same length of time.

6.—A troublesome question was how best to condition samples so as to check results. The committee felt that since practically all bad accidents had happened while the fabrics were dry, testing should be done under the most dangerous condition — namely dry which is a condition incorporated in the test method.

7.—In order to check the testing method itself, seven machines were built and were distributed among seven laboratories. With the details of the machine worked out, several types of brushed fabrics were obtained and samples of these were distributed to the different laboratories for test. Much to the surprise and disappointment of the committee, the different laboratory results did not check. Then began the long task of studying sample preparation and conditioning for test. The condition of the fabric surface was important which led finally to the development of the combing device.

While all this work was going on, the matter of flammable fabrics was suddenly and tragically brought to the attention of Congress and the nation in early April 1945 when three small boys were burnt to death and some seven others injured right in Washington when their cowboy suits caught fire while playing around an unattended brush fire. This focused attention on flammable fabrics and brought suggestions about restrictive legislation to the fore. Congressman LeRoy Johnson of California had already put in a Bill to outlaw flammable fabrics which was essentially the same as the original California Bill in which all fabrics were "compared to cotton cloth in its natural state."

Lest unwise legislation be forced thru Congress an informal meeting in Rep. LeRoy Johnson's office was arranged for by N.R.D.G.A. where Cameron Baker demonstrated the AATCC machine, and members of the committee made it clear that before any legislation could be effective a suitable test method would first have to be devised and this would take some time. Testimony also brought out the fact that the flammability of a fabric was not necessarily due to the kind of cellulosic fibers, whether cotton, linen, ramie, regenerated type of rayon etc., of which the fabric was made, but depended largely upon the construction of the fabric. If the fibers were tightly twisted together in a yarn, which was then woven into a tight compact fabric (like canvas or sheeting), it did not readily take fire, and if it did would burn rather slowly and the flame could quite easily be extinguished. If, on the other hand, the fibers were brushed out on the surface, or were in an open state as in a pile or chenille, then ignition was easy, burning rapid and intense and putting out the flame difficult. Thus a flammable fabric can be defined as one that ignites easily and burns rapidly. Having determined the relative burning rate of various types and kinds of fabric, the final question was which should be considered too hazardous to be worn in outer wearing apparel? To answer this question was not easy. However, the committee obtained samples of fabrics from garments which had actually been worn at the time of accidents. If such actual fabrics were not available, samples of new material of which the accident fabric had been made were obtained. Checking as many such samples on the AATCC tester as possible, the committee found that fabrics tested under the standard conditions of test, which were readily ignited by the one second contact of the standard flame and burned five inches in two seconds or less, had definitely caused serious and some fatal accidents. Fabrics which had a rate of five inches in four seconds were, in their opinion, too near to the borderline of dangerous fabrics to be considered safe. In consequence, fabrics rated at five inches in six or more seconds were considered safe for wearing apparel.

Cases are on record where nitro cellulose coated fabrics have been the cause of fatal accidents. For example, in one case the coated material was made into an apron and when wrapped around the hand to "protect" it while removing baked bread from a hot oven, burst into flame, resulting in panic and painful injury to the victim.

Then there was the report from the California State Fire marshall only last December, which told of a fatal accident when a little five year old girl in Whittier, California backed into an electric radiant heater and ignited her plastic coated raincoat. A committee of the AATCC is now hard at work developing a suitable flammability test method for these special, and in some cases, quite new materials for wearing apparel.

The AATCC method has also been turned over to the National Bureau of Standards, Division of Trade Standards and a tentative Commercial Standard TS-4350 entitled Flammability of Textiles, has been sent out for approval. Three Bills concerning flammable fabrics have been introduced into Congress since it convened in January. Two Bills, one by Rep. LeRoy Johnson of California and one by Rep. Canfield of New Jersey are quite similar in that they unnecessarily take in a great many fabrics. A third Bill, restricted to wearing apparel, was introduced in the House by Rep. Wat Arnold of Missouri and the same bill went to the Senate and was introduced by Senator Capehart of Indiana. This Bill, which had been worked over with some seven revisions, is sponsored by the National Retail Dry Goods Association. All of which is mentioned merely to show the pressure which is on for national legislation. Legislators of some twenty four states are also considering the matter of flammable fabrics for much interest has been aroused by the various accidents which have occurred and which seem to be on the increase with so many more people (me nand women) smoking these days.

NATIONAL CONVENTION

October 23, 24 and 25

CONGRESS HOTEL, CHICAGO

Auspices of Mid-West Section

TRADE NOTES • NEW PRODUCTS

• Manufacturing Chemists Visit Calco Effluent Plant

Calco recently played host to members of the Manufacturing Chemists' Association, assembled in New York for a series of discussions on problems confronting the chemical industry.

The group, headed by Dr. R. W. Hess, President of the Association and Director of Research of the National Aniline Division, Allied Dye & Chemical Corporation, Schenectady, New York, drove from New York to Bound Brook by chartered bus, to visit the model industrial effluent plant of the Calco Chemical Division, American Cyanamid Company. Dr. Victor L. King, Technical Director of Calco, Messrs. R. E. Lester, D. Tarvin, M. Van Nostrand and M. Banks, met the visitors and conducted them through the extensive facilities devoted to the effluent process at Calco.

The Calco process which has been developed under the direction of Dr. King, and has attracted wide attention in industry, involves the following general steps:—(1) Treatment at the source; (2) Collecting; (3) Compositing; (4) Neutralizing acidity; (5) Settling and clarifying; (6) Aeration; (7) Diffusion and dilution in the river.

Among the visitors were representatives of the leading chemical firms in the country including Atlas Powder Company, Koppers, Merck, Eastman Kodak, General Chemical and Mathieson Alkali companies. Considerable interest was expressed in the fact that the effluent from over 1000 different chemical products manufactured at Bound Brook, was absorbed and treated successfully by the Calco process.

Members of the Manufacturing Chemists Association, visit Effluent Plant of the Calco Chemical Division, American Cyanamid Co., Bound Brook, N. J.

• Associated with Polymer Industries

John W. Ogletree is now associated with Dr. M. Konigsberg, Dr. H. L. Kane, and Dr. Frank Campins as directors and officers of Polymer Industries, Inc., 11-08 30th Ave., Astoria, N. Y., which acts as manufacturer and consultant on sizings, gums, softeners, impregnants, and laminants for the textile and paper industries. The four principals were formerly with National Starch Products, New York.

• Tennessee Eastman Fellowships

The Tennessee Eastman Corporation will support six postgraduate fellowships in chemistry, chemical engineering and textile engineering during the scholastic year 1947-48, James C. White, president, announced recently.

Five southern universities and one in the North will share the fellowships.

Details of the fellowships are as follows: $1200, Ph.D., chemistry, Brown University; $1200, Ph.D. chemistry, University of Tennessee; $1200, Ph.D., chemistry, University of North Carolina; $1200, Ph.D., chemistry, University of Virginia; $750, M.S., chemical engineering, Virginia Polytechnic Institute; and $750, M.S., textile engineering, Georgia School of Technology.

"The Tennessee Eastman fellowships are designed to encourage advanced study in these fields by persons of proven scientific ability," Mr. White said. "It is our hope that those selected will find in these fellowships the way to important careers, either in fundamental research and teaching or in industry itself."

Tennessee Eastman Corporation, established in 1920, is the sole source of certain of the basic chemical products used by its parent organization, the Eastman Kodak Company. In its own right, it has also become one of the major producers of cellulose ester plastics and textile fibers, acetate dyestuffs, hydroquinone and its derivatives, and many related organic chemicals.

Plans of the corporation include a large expansion of facilities and personnel for basic research in chemistry and physics, and application of the results to the development of its primary products and their varied uses in industry.

• du Pont Electrochemicals Appointment

The du Pont Company has announced the appointment of Edgar A. Thronson as assistant director of the Technical Division of the Electrochemicals Department.

Mr. Thronson has been a special assistant to D. O. Notman, director of the Technical Division since December 1, 1946, and has been with du Pont since 1929.

He started work as a development chemist at the Niagara Falls plant soon after he was graduated from the University of Wisconsin with a bachelor of arts degree in chemistry. He became a process supervisor in 1934 and an area manager in 1937. From 1945 until he was transferred to Wilmington, he was in charge of all process improvement activities at Niagara Falls.

• Contributions of Scientific Research

One of the most important contributions of scientific research to human welfare is to unravel life's processes and help tc guide men to a full realization of his possibilities and responsibilities, stated Dr. M. L. Crossley, director of research, American Cyanamid Co., in accepting the medal of The American Institute of Chemists, at a dinner in his honor on May second, at the Hotel Commodore, New York.

"A fraction of the attention, thought, and activity given to the development of the atomic bomb would solve the problems of cancer, heart disease, tuberculosis, arthritis and the many mal-functions contributing to anti-social behavior," Dr. Crossley asserted. "Man is a complex organism in which delicately adjusted chemical and physical reactions play important roles in regulating the physiological processes governing his activities. It is not beyond the realm of possibility to know the laws governing man's activities. More research and better correlation of data will give the desired results. There is no greater

need than that for research men and women broadly educated and trained so as to be able to correlate information in different fields of science and focus the results on the solution of biological problems."

The medal award to Dr. Crossley climaxed the Institute's annual meeting, with over four-hundred directors of research and chemists present. During the afternoon, a symposium was held on the "Professional Status of the Chemist," covering England, Canada, and the United States.

• Sandoz Chemical Representatives

The Sandoz Chemical Works, New York, announces the appointments of T. F. O'Brien and J. E. Ormiston, Jr., as sales representatives in the Boston office.

T. F. O'Brien

T. F. O'Brien started with the company in May, 1946, after serving 27 months as a Lieutenant (j.g.) in the U. S. Naval Air Corps, where he specialized in Radar.

J. E. Ormiston, Jr.

J. E. Ormiston, Jr., comes to Sandoz after serving 3½ years in the U. S. Navy. He is a graduate of Colby College and was formerly employed by the American Woolen Company and American Felt Company.

• Nuodex 100 W. D.

A new product, Nuodex 100 W. D., has just been announced by Arthur Minich, Vice-President in Charge of Research and Development, Nuodex Products Co., Inc., Elizabeth F, New Jersey.

The cost of applying new, colorless, odorless Nuodex 100 W. D. is said to be low enough to be absorbed by the textile manufacturer even though the effectiveness of the compound warrants its use in premium mildewproofed goods. It is stated that very low loadings are required—0.1% meets standard *Chaetomium globosum* tests, 0.5% keeps tensile strength loss to less than 10% after two weeks' soil burial—yet the product is said to show durability equivalent to one year's outdoor exposure in Florida, is unsurpassed in its resistance to leaching, and shows no tendency to tender fabrics.

It is claimed that fabrics can be made to pass a *Chaetomium globosum* test for a mildewproofing agent cost of less than two hundredths of a cent per square yard per ounce of fabric weight, pass two weeks' soil burial for less than a tenth of a cent per square yard per ounce of fabric weight.

Nuodex 100 W. D. is said to be easily and completely water dispersible, does not affect loading, feel or hand of textiles. The product is said to be effective in stopping the growth of surface growing, disfiguring mildew as well as the cellulose rotting types.

Nuodex 100 W. D. is said to be suitable for use on the most delicate fabrics. It is further said to be non-irritant and may be used on wearing apparel. Its extreme durability and leach resistance, however, is said to make it equally ideal for use in awning cloth, tarpaulins or sail cloth.

Nuodex 100 W. D. is also available in a solvent or oil soluble form, Nuodex 100 S. S. This oil soluble modification may be used in oil base textile finishes and its use alone as a mildewproofing agent by manufacturers equipped to handle solvents results in a somewhat lower cost per unit of mildew protection.

• New Calco Technical Bulletin

Chemists and dyers will be interested in the recent announcement by the Calco Chemical Division, American Cyanamid Company, Bound Brook, New Jersey, that the new Calco Technical Bulletin No. 778, "Importance of pH Control in Wool Processing," has been made available for distribution.

Much interest has been created with the publication of many articles on this subject in recent years. The importance of the adjustment of pH of wool fabrics, yarn or raw stock prior to dyeing is now recognized.

A copy of the new Calco Technical Bulletin may be obtained from your Calco representative or by writing the Advertising Department, Calco Chemical Division, American Cyanamid Company, Bound Brook, New Jersey.

• Director of Controllers

Franklin R. Ehmann, Controller of the Hellwig Dyeing Corporation, has been re-elected Director of the Philadelphia Control of Controllers Institute of America for the fiscal year 1947-1948.

• Textile Foundation Annual Meeting

For the 18th consecutive time Franklin W. Hobbs was elected Chairman of the Board of Directors of the Textile Foundation at the Annual Meeting in Washington, D. C. Other members of the Board are Frank D. Cheney, Treasurer, Donald Comer, Clinton P. Anderson and W. Averell Harriman. Edward T. Pickard is Secretary and Assistant Treasurer.

Reports received at the meeting showed marked progress and achievement in the field of scientific research. During the year just ended Dr. John H. Dillon was appointed the Foundation's Director of Research, and in the Laboratories at Princeton he has under way four fundamental research jobs, namely, 1—Mechanical Properties of Fibers, 2—Relaxation-Birefringence Studies, 3—Organic Chemical Studies of Starch and Cellulose Structure, and 4—Sorption and Swelling Studies. In addition research projects administered by the Foundation are in operation for the Quartermaster Corps and for the Signal Corps. Work on all of these projects is assigned to a dozen Textile Research Institute Fellows, as well as to the full time members of the Foundation's staff. The Research Fellows spend part of their time in taking courses at the Princeton Graduate School looking toward masters or doctors degrees.

In economic research the report completed early in 1946, "Postwar Prospects for American Textiles," has attracted widespread attention and study. Growing out of this searching analysis two additional titles have been authorized for study. They are broadly described as "The National Agricultural Policy With Respect to Cotton" and "Trends in Textile Distribution With Particular Attention to Vertical Integration."

The Foundation's activities in the area of textile education moved ahead with accelerated emphasis in view of the tre-

• Nearly a Half Century of Service

N. A. McManus and Elias D. Cohen, vice presidents of National Starch Products, Inc., New York, receive 45-year pins in recognition of continuous service with the company. Shown here, left to right, are Mr. McManus, Frank K. Greenwall, president of National, and Mr. Cohen, as the two veteran officers receive congratulations on their record.

mendous burden of extra students and curricula put upon the ten textile schools by the demand for increased enrollments. Twice during the year, under the sponsorship of the Foundation, the Deans of the textile schools gathered for discussion of their plans and problems. Some of the more pressing ones are—the complex problems arising from the unusually heavy registration and teaching schedules, the outlook for fall enrollments, policies related to out of state and foreign students, the securing of new equipment and machinery for teaching purposes, improvement in course and curricula content, visual education aids, research activities in the schools, the training of suitable candidates for teaching jobs, and the securing of qualfied instructors.

In order to provide a more effective and useful method of getting research material into the hands of those who should use it, the Board voted to establish a Textile Research Information Service which will have its headquarters in the Princeton Laboratories of the Foundation. It is aimed to perform this service jointly with the Textile Research Institute.

• Textile Manufacturers Outing

Friday, June 27th is the date of the 21st Annual Outing of the Philadelphia Textile Mfrs. Assn. The event, to be held this year at the Cedarbrook Country Club, annually brings together textile manufacturers and suppliers for golf and a general good time.

The Outing Committee is headed by Fred Scholler, Scholler Bros., Inc., and Bill Harm, Harm-Bromiley, Inc. as associate Chairmen. Others serving are William Bates, Virginia Towel Mills, J. W. Farquhar, Peerless Dyeing Co.; Edwin L. Dale, Sauquoit Silk Co., Inc.; Frank Fox, Jr., Wister Spinning Co., and Glenn Robertson, Roxborough Co.

Subsequent announcement of plans will be made. Because of the great interest usually manifested in textile circles for this social event, the Committee desired to make the date known as early as possible.

• Pro-Nyl Colors

Pro-Nyl Colors for Nylon were demonstrated at the recent Knitting Arts Exhibition in Atlantic City by the Hickory Specialty Co., Inc., Hickory, N. C., an affiliate of the Specialty Products Co., Jersey City, N. J.

The four colors that are being supplied at the present time have been given the following designations with reference to their use as self shades:

Pro-Nyl Yellow 4RL—a reddish yellow.

Pro-Nyl Red BB Extra—a blue shade of red.

Pro-Nyl Orange D—a full dull orange.

Pro-Nyl Blue SC—a desirable full blue.

The Yellow 4RL and the Red BB Extra, the Yellow 4RL and the Orange D, and the Orange D and Blue SC, respectively, may be mixed in all proportions with corresponding toning effects that would be obtained with any other group of colors.

The Orange in admixture with the Red will give violet to brown shades; practically every shade of brown may be obtained by using the Yellow and Red and adding the Orange as a shading color. Where deeper shades are to be dyed the Blue will be found more serviceable.

Good even penetration of the dyestuffs and good fastness to washing are claimed.

A bulletin, giving instructions for application of these colors, is available upon request.

• Protean W

Protean Chemical Corp., 150 Nassau Street, New York City, has issued a bulletin on Protean W as a protective and leveling agent in the dyeing of wool and union goods.

Protean W is a degradation product of albumin and, it is stated, its addition to a fresh bath converts it into a standing bath and prevents the wool from being further boiled out or injured. The result is said to be that the duration of dyeing is practically cut in half, the wool retains its original character, and there is no deterioration in strength and elongation. It is stated that, because of its properties, it will be found that its use in the dyeing of wool, union goods, and mixture fabrics of staple fiber and wool improves the wool, improves the shades, and further effects a saving in steam, chemicals and wages.

Instructions for use of Protean W is given in the bulletin for the following instances:

The Dyeing of Loose Stock in Machines.

The Dyeing of Loose Wool in Open Vessels.

The Dyeing of Tops in Machines.

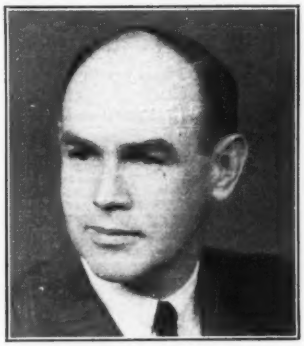
The Dyeing of Woolen Yarn (In Hank Form in the Beck, In Hank Form in the Machine, Dyeing Cops or Cheeses in the Machine).

The Dyeing of Woolen Piece Goods.

The Dyeing of Loose Stock in the Vat.

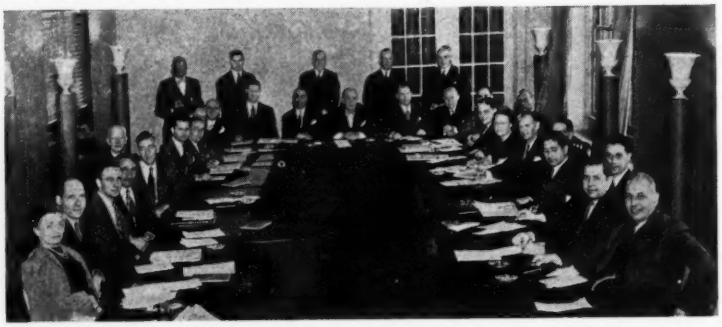
The Dyeing of Unions and Wool Mixture Yarns.

• Alco Oil & Chemical Appointment



Dr. Onslow B. Hager, who has been appointed Director of Research and Development for Alco Oil and Chemical Corp., Philadelphia, Pa. Dr. Hager's extensive experience in textile chemistry includes three years as research chemist for Riverside and Dan River Cotton Mills and twelve years as head of the textile chemicals evaluation and sales-service laboratories of Rohm & Haas Company. During the war years he was particularly active on problems connected with protection of textiles from attack by mildew, serving actively on committees in AATCC, A. S. T. M. Committee D-13, and O. S. R. D. on this subject. He was also appointed by N. D. R. C. as co-investigator (with Dr. Loren C. Hurd of Rohm & Haas Company) on analytical problems related to protective clothing against chemical warfare gases.

• Meeting, National Starch Executives



Executives and department managers from offices and plants of National Starch Products Inc. throughout the United States and its Canadian affiliate, Meredith, Simmons & Co. Ltd., confer at their quarterly meeting held at the Hotel Biltmore, New York City, on April 12.

Shown seated, left to right, are: Miss E. Mitchell, purchasing agent; Dr. R. W. Merritt, assistant to vice president in charge of manufacturing; S. F. Thune, sales manager of Pacific Coast Division, San Francisco; S. Gaines, plant manager, San Francisco; N. A. McManus, vice president; R. C. McGaffin, manager, Resyn department; D. D. Pascal, assistant vice president and technical director; E. R. Regan, Chicago office manager; A. A. Bates, assistant secretary; S. S. Snyder, manager, Philadelphia division; Dr. T. A. White, in charge of General Laboratory; Alfred A. Halden, executive vice president; Chester A. Gage, vice president in charge of sales; D. F. Barthelmess, New York sales manager; H. C. Piel, assistant vice president in charge of Indianapolis plant; L. Klempner, manager, Southeastern division, Atlanta; J. Dillon, general manager, Mid-west division, Chicago; H. F. Stegall, manager, Southern division, New Orleans; Miss Edythe Slottman, assistant secretary; J. F. Fitzgerald, manager, industrial starch division; R. A. Bintz, manager, Dunellen (N. J.) plant; Frank K. Greenwall, president; Dr. W. V. Upton, in charge of Resyn research; F. Bradley, New England division manager, Boston, and E. Hoffman, manager, Montreal division.

Standing at the rear are, left to right; Elias D. Cohen, vice president; Dr. C. G. Caldwell, research coordinator; S. E. MacDonald, comptroller; A. B. Meredith, president of Meredith-Simmons, Toronto, and A. L. Pulfrey, director of personnel relations.

Protean W may also be used as a protective agent in the processing of furs, leathers, etc.

• Research Information Service Reports

Research Information Service, publishers of scientific and technical data and foreign patent applications, 509 Fifth Avenue, New York 17, N. Y., announces the availability of the following reports:

5509—Methods of Manufacturing High-Strength Viscose Yarn and of Preparing Polyamide Solutions or Pastes (3 parts)—$24.00.

5512—Process for Manufacturing Proto-Dyes Containing a Carbon Chain with at least Six Carbon Atoms—$7.50.

5513—Process for Animalization of Natural and Artificial Fibers, etc.—$12.00.

5516—Process for Manufacturing Viscose Fibers of Increased Dry and Wet Strength—$10.50.

5517—Continuously Operating Hydro-Extractor—$14.00.

5520—Process for Animalizing Natural or Artificial Fibers, etc.—$4.00.

5521—Process for Manufacturing Artificial Fibers or Threads from Viscose—$12.50.

5522—Process for Manufacturing Artificial Threads or Fibers from Polyvinyl Chloride and Cellulose Esters or Ethers—$14.00.

• Hercules Synthetics Sales Office

The establishment of a Hercules Powder Company Synthetics Department sales office in St. Louis, Missouri, which, with the company's Naval Stores Department office, was opened May 5, at 3615 Olive Street, St. Louis 1, has been announced.

The Naval Stores office was formerly located at 611 Olive Street.

Although the Hercules' Naval Stores Department has had a St. Louis office for many years, this is the first Synthetics Department office to be established there.

Jordan P. Snyder will be technical sales representative for the Synthetics Department in the St. Louis office, which will operate as a sub-office under Paul Lefebvre, district manager in Chicago. Mr. Snyder has been working out of the Chicago office for the past two years and is well known in the St. Louis area.

The Naval Stores representative is Joseph M. Carbonara who has been a member of this department's sales division since 1939. Mr. Carbonara became St. Louis representative in February.

• New Hercules Plant

A modern new Hercules Powder Company plant, for the manufacture of chemicals for the paint, varnish, lacquer, adhesives, and other industries, has been officially opened at Burlington, N. J. by Dr. W. M. Billing, general manager of Hercules' Synthetics Department.

The first unit of the plant to be brought into production was the one for the manufacture of Pentaerythritol resins for protective coatings. Subsequently, units for the manufacture of liquid resins, rosin esters, and hydroabietyl alcohol, will be in operation. The plant is expected to be in full production the latter part of this summer.

• Hooker Producing Monochloracetic Acid

E. R. Bartlett, President of the Hooker Electrochemical Company, has announced the commercial scale production of Monochloracetic Acid at the Niagara Falls, New York plant. Emerging from several months on pilot plant scale, the process is now operating in new buildings erected for the purpose.

Monochloracetic acid is in considerable demand for agricultural chemicals, such as 2,4-Dichlorphenoxyacetic Acid, a selective weed killer, and esters of Alphanaphthaleneacetic Acid, being used for fruit set and tuber storage control. Other chemicals of commercial importance derived from Monochloracetic Acid are Carboxymethylcellulose, its sodium salt and other derivatives, Thio and Thioindigoid dyes, Cyanoacetic Acid, Thioglycollic Acid, Ammonium Thioglycollate, and many others.

Although the plant is beginning large scale operation, all of its production is taken for some time to come. Further announcement will be made when the product is available generally.

ABSTRACTS FROM CONTEMPORARY JOURNALS

Phase Study of Commercial Soap — Alkaline Electrolyte-Water Systems

Reynold C. Merrill, Industrial and Engineering Chemistry, page 158, Vol. 39, No. 2, February, 1947.

In 1937, the last year for which accurate data on consumption are apparently available, 160,000 tons of 40° Baumé sodium silicates and 39,500 tons of sodium phosphates were consumed by the United States soap industry according to the Bureau of the Census. Wartime shortages of fats, oils, and rosins for soap-making re-emphasized the value of builders in soaps. Attention has been focused on the amounts of various builders which can be added to different soaps under varying conditions and on the nature of such systems.

This paper reports a study of the phase behavior of a typical commercial mixed soap with the following salts: sodium chloride, carbonate and tetraborate, trisodium phosphate, tetrasodium pyrophosphate, Calgon, sodium metasilicate, sodium silicates of SiO_2/Na_2O weight ratios of 2.46 and 3.93, and a potassium silicate of SiO_2/K_2O weight ratio of 2.04. Soap concentrations up to 50%, salt concentrations as high as 27%, and temperatures up to 180°C were studied.

The solubility of the soap in solutions of these salts and their effect on the transition from crystalline to liquid crystalline soap varies widely both on weight and molecular bases. The order of increasing effect differs with contraction and temperature. Sufficient regularities exist so that the data of this paper can be used to predict phase diagrams for other soaps and concentrations. One of the practical industrial applications of such work is to predict the amounts of various builders which will dissolve in soaps at crutching temperatures.

Permanent Sizes Approved by Test in QM Project at ITT*

Textile World, page 122, Vol. 97, No. 2, February, 1947.

Permanent warp sizing materials were evaluated by the Institute of Textile Technology under assignment by the Office of the Quartermaster General. Forty-three materials and combinations of materials were tested, four of which had satisfactory mildew resistance and other acceptable warp size qualities. These sizes are identified by trade name and manufacturer.

Mill trials were recommended for the four accepted sizes. Operating conditions as recommended are quoted from the original report.

The project was carried out in two phases, the first being mildew testing of submitted materials, the second, preparation of yarns from approved materials for single-end testing.

General qualities desirable in a sized yarn are increased stiffness, increased abrasion resistance, and increased tensile strength, all within limits, and also maximum retention of elasticity and good fiber lay.

Yarns were sized on a modification of the slasher designed by the Clemson laboratory of the U. S. Dept. of Agriculture. Stretching was prevented as much as possible. Abrasion tests were attempted but abandoned due to the absence of correlation to "wearability." Stiffness, tensile strength, and elongation tests were made as well as visual tests of stiffness during slashing and hard-loop and hand-break behavior. Test results indicated that the four best materials were as good as or better than starch. A table of test results and yarn-appearance photographs are given.

*From Textile Series, Report No. 41 (released by the Office of Technical Services, U. S. Dept. of Commerce), based on research at the Institute of Technology, Charlottesville, Va., under contract from the Office of the Quartermaster General through the National Research Council.

Cationic Softeners Give Permanent Finish

C. Norris Rabold, Textile World, page 147, Vol. 97, No. 2, February, 1947.

Cationic type softeners establish a firm bond between softener and fiber due to a reaction between the negative charge of the fibers and the positive charge of the cationic softener.

Earlier cationic products were difficult to solubilize and were often more expensive than the common oil and wax finishes. Current softeners show considerable improvement in these and other properties. Some types of cationic softeners may be used in alkaline solutions. These are reported to have excellent wetting agent properties.

Cationic softeners are particularly effective on synthetic fibers. The usual softener concentration is less than 1% except when used with resins. Cationic active softeners have much value as modifiers of the stiffness and harshness often found with the new resin finishes. Fabric tests for the evaluation of these softeners are illustrated.

New Printing Process for "Acetate Rayon"

"Technologist," Textile Mercury and Argus, page 715, Vol. CXV, No. 3007, November 8, 1946.

Although the printing of acetate rayon materials has been carried out successfully for a number of years, there are, nevertheless, more difficulties connected with this printing than others, such as viscose rayon goods. The reason for this is that acetate rayon is not so easily permeated or swollen by water or steam and also in printing with vat dyes the alkalinity is usually sufficient to produce a degree of saponification which is not desirable.

B. P 579,718 describes a simple method which is carried out in the cold and utilizes dyes not normally applied to acetate rayon — the acid wool dyes. This new printing process is based upon the deposition of the dyestuff within the fiber substance by means of organic solvents. In addition to the dyes, a color paste would contain an aliphatic monohydric alcohol, a thickener, an inorganic thiocyanate, and a lower aliphatic mono-carboxylic acid. The acid wool dyes so applied pass into the rayon fibers quickly so that residual chemicals can be washed free immediately thereafter. An example of how the process is carried out is given.

Migration in Dyeing

The Dyer and Textile Printer, page 445, Vol. XCVI, No. 10, November 8, 1946.

Under certain conditions the coloring matters with which textiles have been dyed, or partly dyed, will move into fresh positions on the same or adjacent yarns or fabric, with either a betterment or worsening of the final dyed result. This phenomenon is called migration. The circumstances in which migration occurs are many but one essential requirement common to all is the presence of moisture.

In dyeing with dyes which dye on the fiber by virtue of their affinity, an exchange of dyestuff takes place between the dyed material and the dyestuff liquor which serves the purpose of leveling, a form of migration.

Investigations by dyestuff manufacturers and others have established the individuality of dyestuffs regarding migration. Results of these investigations are summarized.

Unwanted movement of dyes and preparing materials are a prolific cause of spoiled dyeings. A number of illustrations are given.

Side to side migration in dyeing occurs most easily in the case of coloring materials which have little or no affinity for the fiber as evidenced by the lack of migration in the drying of vat dyeings.

A case in which migration is desired is described as a differential dyeing process with resulting controlled novel effects and patterns.

Unwanted migration can cause consider-

able trouble and several suggestions are given to prevent it such as mangling and drying materials as quickly as possible and not allowing wet batches of material to come in contact with one another.

Printing Cotton Fabric with Basic Dyestuffs

The Dyer and Textile Printer, page 591, Vol. XCVI, No. 13, December 20, 1946.

Basic dyestuffs are still valuable for the production of printed styles on certain classes of cotton fabric on which vivid coloring is of paramount importance. Basic dyestuffs not only give brilliant colorings but they also produce designs consisting mainly of a series of fine lines which are clean-cut in appearance and free from tiny breaks.

Although it is possible to print basic colors without fixatives it is sometimes desirable to have a certain amount of wash fastness if only to allow the removal of thickeners.

Starch and tragacanth combinations are frequently used for thickening basic dyestuff printing colors. However, plain wheat starch may be used on the cheaper quality fabrics. A typical base color mixture is given along with details of the preparation of the printing color.

The addition of acetine to the color facilitates the production of a well blended shade but its true value is realized only when the goods are steamed in a cottage steamer for approximately one half-hour.

Methods for fixing basic color prints with both tannic acid and by the hot-calendaring of prints in which albumen is incorporated in the color are given.

Steaming at 30-40 lbs. per square inch in a steaming cottage is a common fixing procedure after printing cotton sleeve linings. This will also remove excess acetic acid.

To obtain the maximum brilliancy of shade, thorough bleaching of the goods before printing is recommended. The most satisfactory results are obtained by bleaching in the open-width instead of the usual rope-form.

Textile Research Shows Rapid Growth

Joseph V. Sherman, Textile World, page 135, Vol. 97, No. 1, January, 1947.

Surveys made by the National Research Council in 1940 and 1946 indicate a 58% increase in the number of companies engaged in textile research and a 100% increase in research personnel during the six year period. Expenditures made by the textile industry on research in 1946 are approximately double that of 1940. However, survey data shows the textile industry to be far behind industry as a whole in money spent on research.

The major portion of research has been on rayon, the results of which are shown in improvement in rayon quality and price reduction. This same accomplishment may be expected with the newer man-made fibers. Extensive research on these fibers is now in progress by several companies.

New protein-type fibers may also be expected. Much research work on these fibers is being carried on by the four Regional Research Laboratories of the U. S. Department of Agriculture.

Development of new fibers and chemical treatments have given impetus to research in the textile industry. This is most pronounced in the field of chemicals and coatings for textiles. Fabric construction utilizing bonded fiber webs shows great promise as the modern counterpart of felt. Through research, this material may be developed for wearing apparel.

Better Finishes at Less Cost Is Goal of Industry

C. Norris Rabold and N. D. Marins, Textile World, page 114, Vol. 97, No. 2, February, 1947.

Major developments in cotton finishing during the past year have been in the processing operations such as boiling-off, bleaching and dyeing. Continuous steaming or bleaching ranges have been accepted as is evidenced by the number of installations. The newer units being produced benefit from data obtained from previous installations. The duPont pad system and the Williams unit have also been accepted as continuous dyeing systems.

Considerable improvement may be expected in fabric shrinkage stability, appearance, and wearing qualities through better fiber mixtures and chemical treatments. Synthetic detergents are now in a position to prove their value. Intelligent use of a good synthetic detergent will give equivalent results as economically as soaps. Self-scouring oils and lubricants will increase in use and considering the improvements made, they may completely replace olive oil.

Melamine resin treatments as well as the chlorination, Durlana and Koloc processes have progressed during the past few months which should result in a greater supply of washable wool garments for the consumer.

Dye Migration: Its Advantages and Disadvantages

"Tintex", Textile Mercury and Argus, page 851, Vol. CXV, No. 3010, November 29, 1946: page 898, Vol. CXV, No. 3011, December 6, 1946.

Direct dyes are the most important class of dyes now available to cotton and rayon dyers. The majority of direct dyes give an even, level shade on most cotton and rayon materials.

Although initial absorption of the direct dye is uneven, at the end of the dyeing process the fabric is evenly colored. This is due to migration of the dye from the fabric to the dye liquor and back to the fabric. Absorption and desorption of the dye reaches a state of equilibrium at the end of the dyeing.

Dye migration is influenced by temperature with more rapid migration occurring at the higher temperatures.

Undesirable migration of dye may occur in the washing-off treatment of discharge printed fabrics. A remedy is to use dyes which are diazotized on the fiber and then after-coupled with a developer. It is also possible to use compounds which prevent migration.

Dye migration may occur in wet folded fabrics changing an even dyeing to one which is patchy.

Variations in dye migration between one type of fiber and another may result in an uneven dye absorption in fiber blended material.

Acid Catalysts for Use in the Crease-Resistant Finishes

"Technologist", Textile Mercury and Argus, page 1005, Vol CXV, No. 3014, December 27, 1946.

Satisfactory resistance to creasing cannot be obtained by the simple coating of a fiber with a resinous solution or dispersion. The substance of the fiber must be penetrated. The size of the molecules of most synthetic resins prohibit penetration.

Resins made from urea and formaldehyde under alkaline conditions do not impart crease resistance and are not fast to washing. Acid conditions are necessary for good results.

The best method for using urea formaldehyde resins is to react the resin components under neutral or slightly alkaline conditions producing urea methylol compounds and then adding an acid or a substance which will yield an acid.

A suitable acid catalyst is ammonium dihydrogen phosphate. During the drying and heating of the fabric this compound develops the proper degree of acidity to cause the formation of a highly insoluble urea-formaldehyde resin. Detailed formulations are given for applying this treatment.

It is possible to secure good crease resistant finishes using admixtures of ammonium thiocyanate and sodium hexametaphosphate. In this case foreign iron compounds are prevented from discoloring the fabric. A recommended finishing treatment using these compounds is given.

Patent Digest—

(Continued from Page 288)

compared with that of the treated material, having about 90% (100% is the absolute degree of elasticity, restoring a creasing angle of 180° while placed on a mercury surface.)

Adhesives — Resinous products, acylthioureas as catalysts G, 2, 02

Swiss Pat. 238,151
(Bata A. G., October 1, 1945)

It is common practice to apply water soluble urea-formaldehydes pre-condensates as adhesives. As pointed out in the present specification a slightly acid reaction causes premature condensation and brittleness of the layer which connects the surfaces to be pasted together (that can as well refer to laminated fabrics). The invention comprises the use of acylthioureas (example acetlythiourea) as curing catalysts. Acylthioureas are relatively stable products. They are slowly decomposed by formaldehyde which is always present in excess; the acetyl group is eliminated by hydrolysis and thiourea is generated which takes part in the reaction. On the other hand organic acid is formed which favorably influences the condensation process.

Earlier work done in the field of urea-formaldehyde-adhesives: U. S. Pat. 2,397,194 (Miller) protects the manufacture of adhesives from urea-formaldehyde using a large excess of ammonia. Can. Pat. 434,645/6 (I. G. Farben Ind.-Scheuermann); urea-formaldehyde condensates are combined with polyamines to prevent premature condensation with the purpose to make adhesives.

Rolls for Calenders — Vinyl Polymerisates G, 3

Swiss Pat. 238,525
(Suhner & Co., Herisau, Switzerland, Nov. 1, 1945)

Rollers having soft resilient surfaces (for instance rollers used in calenders, printing machines etc.) are mostly made from an iron or wooden core, covered with rubber material. The patent enumerates some drawbacks caused by the use of rubber such as poor adhesion of the single layers — especially in the case of synthetic rubber — or insufficient resistance to oils, waxes and solvents when natural (soft) rubber layers are used. It is suggested to substitute for the above mentioned material polymerisates such as polyvinylacetate, polyvinylchlorides, polystyrenes and the like, mixed with plasticizers (tricresylphosphate). Copolymers, containing at least a substantial percentage of vinyl compounds are suitable too. Every degree of softness can be attained and the mass is resistant to chemical agents.

References: U. S. Pat. 2,153,324 (Bjorksten) proposed to use acrylate resins as a material for constructing pads or rolls; Brit. P. 457,937 (Cutler) described rolls from products obtained by polymerizing halogenated acetylene compounds.

Shrinkproofing Wool — Chlorites Plus Acids A, 2, 04

Australian Pat. 121,074
(Imp. Chem. Ind. of Australia and New Zealand, March 7, 1946)

Woolen materials in form of loose fibers, knitted or woven fabrics are given diminished shrinking properties by a process which comprises first impregnating the materials with an aqueous solution of sodium chlorite and then in a hot solution of hydrochloric acid. Substances capable of reacting with chlorine peroxide such as H_2O_2, oxalic or tartaric acid may be added. An example suggests impregnating 10 p. of a wool fabric at 50° C with a 3% solution of sodium chlorite, to express the fabric to 100% increase in weight and to treat it thereupon for one minute in a bath, consisting of 300 p 4-5 vol. % hydrogen peroxide, 1.14 p. hydrochloric acid (sp. grav. 1.14) and 0.7 p. oxalic acid.

The Brit. P. 561,475 (Imp. Chem. Ind.), 1944, corresponds probably to this patent. Only a short time after the publication of this patent the Brit. P. 564,958 was granted to Greenwood Dyeing Co., protecting shrinkage control by using first a chlorinating agent and thereafter a hydrogen peroxide treatment.

Acid Dyeings — Phosphoric Acid Added C, 4, 06

Australian Pat. 121,131
(Noble, February 27, 1946)

The present invention explains the reaction of free acids in dyeing acid dyestuffs on wool. It is well known that at a very low pH, thus under strongly acid conditions, the speed of absorption is very great. Sulfuric acid has by this reason the drawback to cause uneven dyes. The inventor suggests to use orthophosphoric acid or a salt thereof (example ammonium dihydrogen phosphate) in dyeing wool with acid dyestuffs, chrome or metallized dyestuffs of the Neolan type. The dyebath has an higher pH as compared with dyebaths containing sulfuric acid. In consequence a greater migration of the dye takes place continuously from one part of the fiber to another; in other words, the dyestuff does not combine so quickly with the fiber and a good penetrating and leveling effect can be observed. Other advantages are the less destructive effect of phosphoric acid on dyestuffs, fibers and metallic parts of the dyeing equipment. An example mentions a dyeing process of knitting worsted yarn with Alizarine Light Blue 3 GA, Azorubinol 2G and Xylene Light Yellow 2 G (all Sandoz) using 4.4% phosphoric acid calculated on the weight of wool. After dyeing the pH (being at the start=1.6) was found to have risen to 4.4. The author described his process with many details in the English Periodical "THE DYER" of Aug. 4, 1944, p. 103.

Reference concerning dyeing wool with other acids than sulfuric acid: U. S. Pat. 2,346,473 (du Pont) proposes to dye at an higher pH (=3.5) than usual by using hydroxyacetic acid as a dyeing auxiliary.

Creaseproofing Textiles — Heavy Metal Salts Added to Resin Condensates G, 2, 04

Ger. Pat. 749,928
(Anon, December 11, 1944)

It is emphasized that every former process, consisting of condensing urea and formaldehyde requires special and very carefully checked conditions. It is claimed that water- and alkali-soluble products of this group can easily be obtained by condensing urea (or thiourea) and formaldehyde in the presence of amphoteric metals, oxides or hydroxides. The metallic compounds are first added to formaldehyde; urea is dissolved in this mixture while adding some caustic. "Amphoteric metals" or their compounds are for instance zinc powder, zinc oxide, aluminum oxide, $Pb(OH)_2$ and so on. According to one of the examples, formaldehyde 40% is mixed with about 0.5% its weight zinc powder and NaOH 40% is immediately added. After mixing, the ingredients are kept for 24 hours at room temperature. A thick white paste is obtained, soluble in water with a slight turbidity. These resin pre-condensates, being very stable, have the purpose to improve the crease resistance of vegetable fiber products.

References: U. S. Pat. 1,925,914 (Heberlein, Zaenker) used first resins mixed with multivalent metal salts such as Zn or Al salts for creaseproofing textiles. It is assumed that the resin does not penetrate as deeply into the fiber as in using the usual (metal salt-free) condensates. An adhesive having delayed hardening properties is prepared from water soluble urea-formaldehyde pre-condensates to which magnesium oxide, zinc oxide or zinc hydroxide and an ammonium salt of a strong acid as a latent catalyst are added.

Resin Condensates — Fixation Of Printed Dyestuffs D, 2, 07

Ger. Pat. 750,397
(I. G. Farbenind., Nestelberger, January 22, 1945)

The present patent discloses in its introduction that it is known to use urea-formaldehyde condensates as fixing agents in textile printing methods. It has furthermore already been suggested to add some polyvinylalcohol to these printing pastes. The invention contemplates adding an excess of formaldehyde to the paste to make it sure that also the polyvinylalcohol will combine with formaldehyde. A printing formula runs as follows:

100 g. dyestuff, 20% paste
50 " water
100 " tragancanth-mucilage 6%
300 " urea-formaldehyde, 1:2
400 " polyvinylalcohol-formaldehyde, 3:1
50 " glycolic acid

An improvement can be found therein that the prints are much more resistant to washing than pre-condensates which *do not contain* formaldehyde-polyvinyl-condensates.

References: Condensates of polyvinylalcohol with formaldehyde have been recommended by I. G. Farben (Brit. P. 431,524 and 431,703/4) as creaseproofing agents. Condensates of polyvinylesters with aldehydes are characterized as sizing agents in Brit. P. 430,136 (Nobel). The Ger. Patent 749,390 (I. G. Farbenind.-Nuesslein, issued on Jan. 11, 1945, thus just shortly before the publication of the present patent) proposes to use polyvinylalcohol-aldehyde condensates as dyestuff fixing compounds.

—♦ ♦—

Resins—

(Concluded from Page 287)

increased affinity for different dyestuffs, together with improved washing fastness of direct colors on cotton or rayon.

Acetate rayon by such a treatment acquires affinity for acid colors while viscose rayon increases its affinity for leuco esters of vats.

The fastness of basic dyestuffs can be improved, according to a Ciba patent (F. P. 646,529), by treating them with resin solutions containing either triethanolammine or organic acids.

Application in Printing

Synthetic resins find use in the preparation of printing pastes, where they function as binding agents for pigments. The advantages derived are better fastness of color and the elimination of subsequent treatments normally necessary to fix pigments. The printing pastes are prepared incorporating colored pigments in the synthetic resin solution.

The printed cloth is afterwards submitted to the action of heat which insolubilizes the resin.

When using a white pigment it is possible to obtain various opaque effects. Colored opaque effects can also be obtained with urea-formaldehyde resins by printing discharges or colored acid solutions. The most important resins are the glycerophthalic and vinylic ones. The latter have given very good results because they permit various effects.

Dulling Treatment

By this process it is possible to subdue the brightness of artificial fibers and increase their covering power without damaging their intrinsic qualities of electricity, firmness, etc.

Synthetic resins are being utilized today to obtain such results. They can be applied according to the one or two bath methods or added directly to the viscose solution before spinning. One bath methods are carried out by exhaustion of the bath. The yarns or fabrics are treated in diluted solutions of the resin plus the usual catalysts. The resin is slowly precipitated onto the fiber. In the two bath process the fabrics are treated for a relatively short time in concentrated resin solution, squeezed, then passed into a second bath containing an acid. The most important products for this use are:—

The urea-formaldehyde condensation products (F. P. 804,221 Ciba).

F. P. 855,284 of Eberle concerns the application of soluble cyanamide-formaldehyde condensation products.

Tootal patented a process according to which the viscose mass is mixed with a monomethylolurea dispersion with sodium lauryl sulfonate and caustic soda, then spun, washed and bleached as usual. According to their patent it is possible to obtain a good simultaneous loading effect.

Miscellaneous Uses

Application of resins to furs gives them greater wear resistance. According to P. S. P. 2,140,759, the furs are dipped in a colloidal wax emulsion containing phthalic acid and formaldehyde, then cured to form a plastic material on the fibers. Firmness together with solution of urea or thiourea-formaldehyde and arylsulfonamides condensation products, treating according to patent (Faerberei Appretur A.G. G. P. 717,735) then drying at desired width.

G. P. 709,226 of the I.G. covers an antiseptic treatment for hair nets, webbeings, treated with vinylic resins such as polyvinyl chloride and its mixed polymers in aqueous dispersion of organic solvent solutions with chlorinated hydrocarbons, (trichlorethylene, etc.) polyacrylic esters or polystyrene.

Urea-formaldehyde resins are used to fasten flame-proofing finishes on fabrics treated with ammonium phosphate and silica salts.

Impermeability to gases can be conferred to the cloth by impregnating in emulsion of polyvinyl alcohols with glycerine and latex. The same result is reached by applying isobutylene resins.

Interesting is the application of synthetic resins as binding materials in the process known as "flock printing" consisting in printing on the cloth resins which fix wool, rayon and other white or colored textile fibers in powder form. In such a way suede or velvety effects are obtained. In this last process, resins have replaced gum and linseed oil and greatly enhanced the effect.

Cotton and rayon fabrics can be made shrinkproof by applying urea - formolic resins.

Tootal has replaced formaldehyde with paraformaldehyde in the preparation of urea-formaldehyde resins, having found it more reactive.

Conclusion

Many finishes can be obtained with resins and as we have seen, permament results are possible by chemical modification of the fibers, (finishing with cellulose ether, hydrofobizing, etc.) and semi-durable finishes can be had by depositing inside or on the surface of the fibers, insoluble resins. Among the resins, the more used are the urea-formaldehyde, melamine-formaldehyde and the vinyl and acrylic types. The first named are cheap and have better qualities than the others, for instance, they are colorless in comparison with the phenol-formaldehyde resins and certain polymers. They are handicapped mainly by chlorine retention. The vinyl and crayl resins have great importance and are being well accepted by the European textile industry. Their main defect is that of the thermoplasticity, though they give a hand which is full and soft. Synthetic resins are valuable, as weighting agents.

The expanding use of resins in the textile industry shows promise of continuing as more products are brought on the market and newer applications are found. resin fibers as well as resin treatments are welding the plastic and the textile industry closely and this fact alone will serve to favor the technical development of the entire textile industry.

SANDOZ PRESENTS *The color achievement of the month*

Carte Blanche BY JANTZEN

Jantzen adds stark white flattery to golden sun-tan beauty with this novelty weave sharkskin ensemble. The cleverly designed skirt covers matching shorts which may be worn in the water.

This famous beachwear manufacturer includes Sandoz among its suppliers because it can depend upon Sandoz colors for fastness to seashore sun and salt water wear. In addition, Sandoz dyes and chemicals offer efficiencies in the dyeing operation that result from technical improvements introduced by Sandoz research chemists.

Among Sandoz colors that are ideal for such purposes as bathing suits, by virtue of their brightness and fastness to light, salt water, perspiration and washing, are the Brilliant Alizarine colors—Light Violet FFR, Sky Blue BS, Light Red 4B and the Milling Blues BL, G, 2RL and SL. An outstanding new yellow is Xylene Milling Yellow 3GL.

For acid, chrome or direct dyes . . . or auxiliary chemicals . . . for both natural and synthetic fibres . . . be guided by the successful "color achievements" you have been seeing in these Sandoz advertisements. Sandoz application laboratories are located in New York, Boston, Philadelphia, Charlotte, Los Angeles, Toronto, where stocks in wide range are carried. Other branches are in Chicago, Paterson and Providence.

SANDOZ CHEMICAL WORKS, INC., 61 VAN DAM STREET, NEW YORK 13, N.Y.

SANDOZ *thinks ahead with textiles*

SANDOZ

RESIN EMULSIONS

POLYVINYL ACETATES

DAREX COPOLYMER X 52-L

Low molecular weight polyvinyl acetate emulsion. Requires about one third less plasticizer than high molecular weight resin for most applications. Total solids: 52-55%.

DAREX COPOLYMER X 56-L

High molecular weight polyvinyl acetate emulsion. Total solids: 53-55%.

DAREX COPOLYMER 60-L

Modified high molecular weight polyvinyl acetate emulsion adjusted to higher emulsion viscosity than X 56-L.

HIGH STYRENE RESINS

DAREX COPOLYMER NO. 3-L

Stabilized latex form of DAREX Copolymer No. 3, a 70 Styrene/30 Butadiene rubber resin. Film former and reinforcing agent. May be used either cured or uncured. Total solids: 45-47% pH 8-10.

DAREX COPOLYMER NO. X 34-L

Stabilized latex form of DAREX Copolymer No. X 34, an 85 Styrene/15 Butadiene rubber resin. Reinforcing agent for use to obtain harder, tougher films. Total solids: 45-47% pH 8-10.

AVAILABLE IMMEDIATE DELIVERY

BARRELS — DRUMS

DEWEY AND ALMY CHEMICAL COMPANY

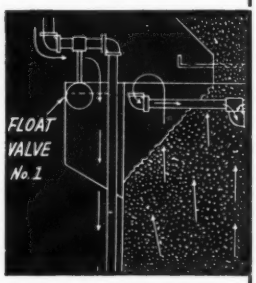
ORGANIC CHEMICALS DIVISION

CAMBRIDGE, MASSACHUSETTS

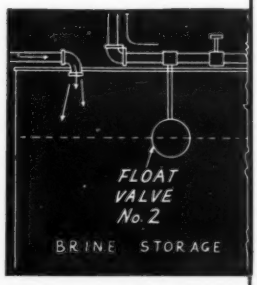
MYLES Brine Equipment Dissolves then Filters!

Once you have used brine that is double filtered, the Myles way, you'll never tolerate cloudy, impure brine again. The crystal-clear brine you get from Myles' exclusive "Double Filtration" gives you brighter, more level dyeings every time — and often costs less than brine from other equipment. You'll find many other attractive features in the Myles Double Filtration Brine Equipment, too:

- Myles original and patented DUAL CONTROLS regulate water intake and brine supply — insuring a thoroughly saturated brine.
- Myles is COMPLETELY AUTOMATIC.
- Myles equipment is non-corrosive made of Stainless Steel, Nickel or Monel with all Brass or Bronze fixtures.
- Uses Myles Rock Salt — eliminating caking, bridging, and channeling which occurs with moisture-absorbing salt.
- HAS FREE-FLOWING GRAVITY FEED.
- EASY TO CLEAN — assuring continuous efficiency.
- SIZES TO FIT EVERY NEED.
- The Myles Double Filtration Brine Percolators — widely used for years with outstanding results and economy.



1 SELF FILTRATION. *Controlled supply of water flows upward through rock salt, dissolving some of it. The solution then flows through the remaining rock salt before it reaches the top.*



2 SECOND FILTRATION. *The insoluable Calcium sulphate rapidly precipitates in the brine. After settling into the settling chamber, the brine passes upward through a gravel filter which removes the last traces of insoluable matter.*

Whatever your problem, Myles' trained technical men will help you before and after installation. There is no charge for this service.

Write today for complete illustrated booklet containing helpful brine charts.

MYLES SALT CO., LTD.

NEW ORLEANS, LA. CHARLOTTE, N. C.

PROTEAN W

A CLEAVAGE PRODUCT OF ALBUMIN

PROTECTIVE AND LEVELLING AGENT
IN WOOL DYEING AND PROCESSING

•

PROTECTIVE AGENT IN THE
STRIPPING OF COLORS

•

IMPROVES YIELDS, SHADES, AND
QUALITY
ALSO ECONOMIZES ON STEAM,
LABOR, ETC.

•

PROTEAN CHEMICAL CORPORATION
150 NASSAU STREET NEW YORK CITY

QUALITY **RICHMOND** PRODUCTS

Less Handling with

AFTER CHLOR

Eliminates 3 to 5 Handlings

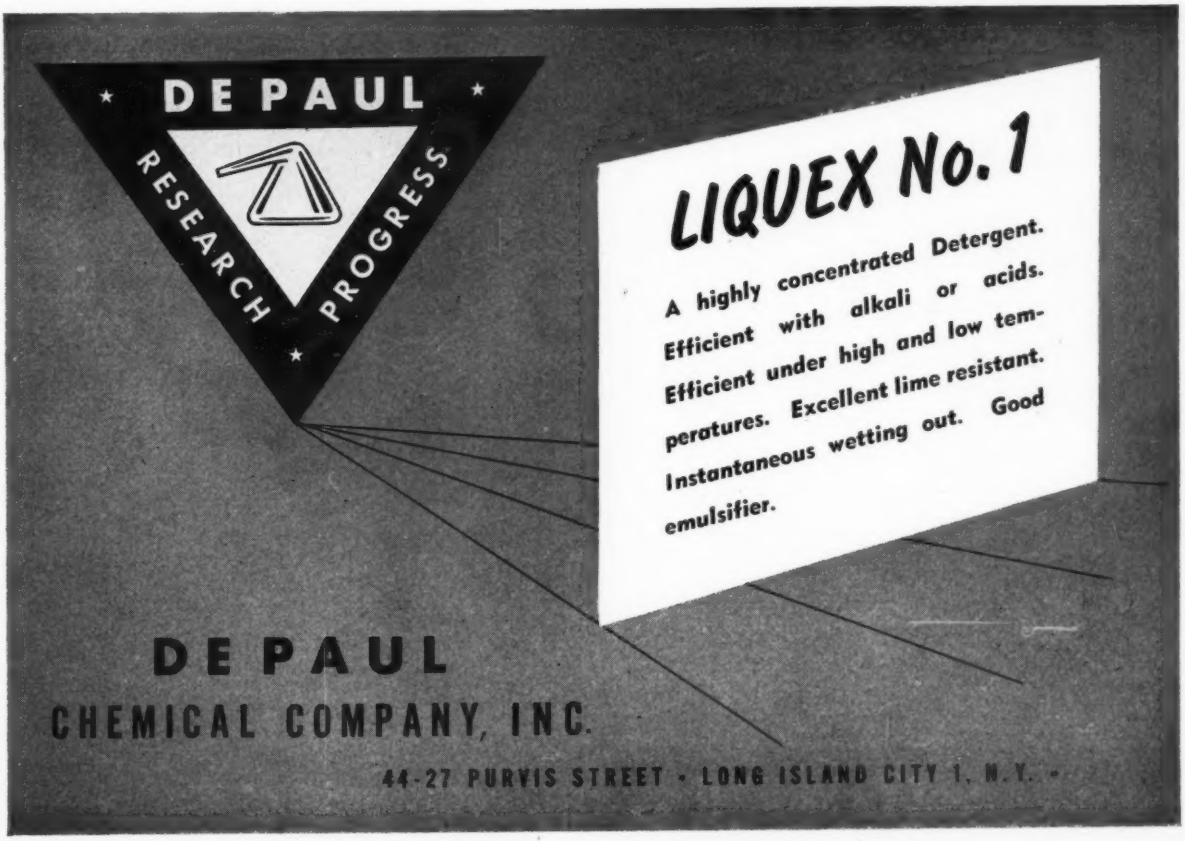
Bleach with
Hypochlorite
Rinse and Use

AFTER CHLOR

THAT'S ALL

Write for FREE Sample

RICHMOND OIL, SOAP & CHEMICAL CO., Inc.
1041-43 FRANKFORD AVE., PHILADELPHIA 25, PA.


DE PAUL
RESEARCH
PROGRESS
LIQUEX No. 1
A highly concentrated Detergent.
Efficient with alkali or acids.
Efficient under high and low temperatures. Excellent lime resistant.
Instantaneous wetting out. Good emulsifier.
DE PAUL
CHEMICAL COMPANY, INC.
44-27 PURVIS STREET • LONG ISLAND CITY 1, N.Y.

• CANADIAN AGENT: CHEMTEX LTD., TORONTO, ONTARIO •

CONSTANT SERVICE
throughout the years!

For a century and a half, American Dyewood Company, the oldest dyestuff concern in the world, has functioned as a continuous business. Logwood is the preferred dye for full, fast, bloomy blacks. It has been fully demonstrated that its use is the truest economy, that it gives you fast production, that there is no real substitute for Logwood.

What's more, fabrics dyed with Logwood gain from 3% to 5% in weight of stock, an important factor from sales and profit angles. Logwood is suitable for woolens and practically all types of fabrics, (Nylon included).

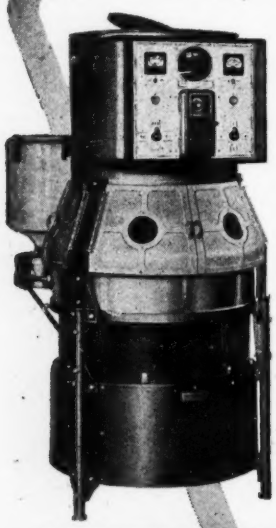
Send for our booklet: "Advantages of Dyeing Wool with Logwood"

AMERICAN DYEWOOD CO.
22 EAST 40th STREET NEW YORK

[LOGWOOD]
first choice for fast blacks

BRANCHES: BOSTON • PHILADELPHIA • CHICAGO
CANADIAN REPRESENTATIVES: CANADA COLORS & CHEMICALS, LTD., TORONTO
PRESCOTT & CO., Reg'd, MONTREAL
ANILINE DIVISION: NEW YORK COLOR & CHEMICAL CO. BELLEVILLE, N. J.

FADE-OMETER



• For over twenty-five years the yardstick of the Textile and Dyestuff industry for determining the light fastness of materials.

An indispensible machine for proving the light fastness of dyestuff and fabrics. Fade-Ometer tests are required by many government specifications.

Specimens are rotated around the Atlas Enclosed Violet Arc—the closest approach to natural sunlight. Temperature and humidity regulated—fully automatic in operation—perfectly safe to operate unattended over night.

ATLAS ELECTRIC DEVICES CO., 361 W. Superior St., Chicago 10, Ill.

ATLAS-OMETERS
Weather-Ometer ★ Fade-Ometer ★ Launder-Ometer

QUALITY RICHMOND PRODUCTS

CUT DOWN DYEHOUSE
Headaches
USE

DYETEX

- Disperses Dyestuff
- Scours
- Used in Scrooping

DYETEX

Send for free sample and full information

RICHMOND OIL, SOAP & CHEMICAL CO., Inc.
1041-43 FRANKFORD AVE. PHILADELPHIA 25, PA

"WAPACO" PRODUCTS
Serve the Textile Industry

WATSON-PARK CO. INC. Wapaco leads BOSTON, MASS.

DYESTUFFS
CHEMICALS
TEXTILE SOAPS
TEXTILE OILS
STRIPPING COMPOUNDS

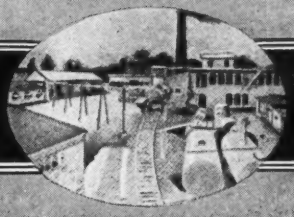
Liquid
HYDRALDEHYDE
THE NAME TO REMEMBER WHEN BUYING STRIPPING AGENTS

•

Outselling all others since its origin twenty years ago—it is *today* the woolen industry's *safe* stripper. Our constant efforts to eliminate free zinc in *liquid* HYDRALDEHYDE through modern manufacturing methods assure stronger fibres in reworked wool and piece goods.

Test *liquid* HYDRALDEHYDE against any other stripping agent offered—either powder or liquid— for a true comparison of the fibre's breaking strength.

•



Factory
LOWELL JCT.
MASS.

WATSON-PARK COMPANY
261 FRANKLIN STREET • BOSTON, MASS.

RAPIDASE

for de-sizing cottons, rayons and mixed goods

•

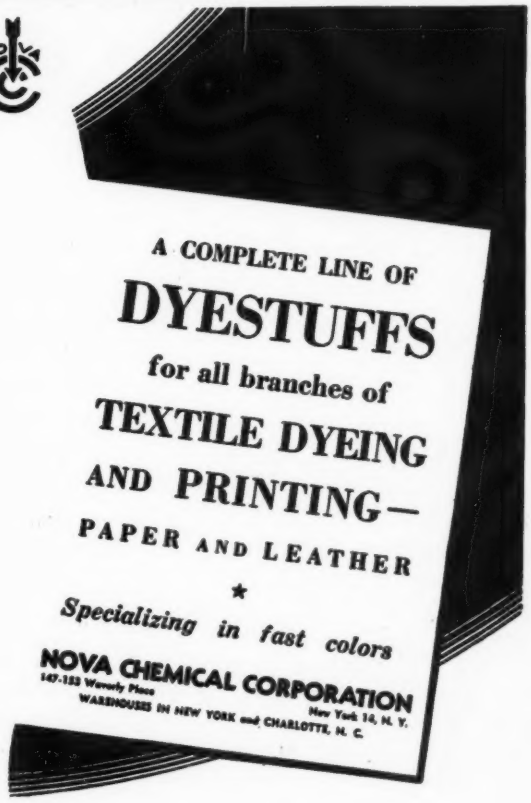
Assures rapid, dependable de-sizing.

•

Our technical staff always at your service.

•

WALLERSTEIN COMPANY, INC.
180 MADISON AVENUE • NEW YORK 16



A COMPLETE LINE OF
DYESTUFFS
for all branches of
TEXTILE DYEING
AND PRINTING—
PAPER AND LEATHER

★

Specializing in fast colors

NOVA CHEMICAL CORPORATION
147-153 Waverly Place
New York 14, N. Y.
WAREHOUSES IN NEW YORK and CHARLOTTE, N. C.

• CLASSIFIED ADVERTISEMENTS •

The rate for "Position Wanted" advertisements in this column is 2 cents a word—with a minimum of 50 cents per insertion. For all other types of advertisements—i.e., help wanted, machinery or supplies for sale—the rate is $7.50 per column inch or less per insertion.

WANTED: Manager of Textile Auxiliary Division old chemical manufacturer. Requisites in order of importance: —(1) Diplomat and executive with real initiative. (2) Chemical education and practical application experience. (3) A good instructor and demonstrator. (4) Sales experience with *meritorious* products.

Few finer opportunities have been offered the right man. Written application will be held confidential. Write Box 231.

WANTED: Chemist—Chicago Area, Textile Coating experience. Give training, age, experience, salary. Write Box 232.

WANTED: Textile Engineer—A man who has technical training and practical experience in the construction of narrow fabrics and thread and cord. Must also have experience in grading same. Salary open. Write Box 234.

FOR SALE

Two five hundred pound Obermeier Package Dyeing Machines, complete with auxiliary equipment which consists of One Extractor, four dryers and 1,000 gallon Hot Water Supply Tank. Write Box 235 American Dyestuff Reporter, One Madison Ave., New York 10, N. Y.

POSITION WANTED: Young man 36 years old. College and Textile School graduate. Sixteen years experience woolen, worsted commission dyeing plant manager. Technical adviser on most textile problems relating to dyeing, finishing, scouring, carbonating, etc. Would consider position in United States or South America. Write Box 236.

POSITION WANTED: Textile Chemical Sales, Research, Development. B.S., M.S.; experience in dyeing and finishing successful record demonstrating and selling textile chemicals in South; five years research in textile finishing. Age 38. Employed, but desires change. Write Box 239.

POSITION WANTED: Textile Colorist with several years of experience in the Screen Printing field. All types of materials. Metropolitan area preferred. Write Box 238.

POSITION WANTED: Chemist, capable assuming full responsibility, diversified practical experience dyeing and printing, seeks connection with vigorous expanding organization. Write Box 237.

POSITION WANTED: New England Companies, Research & Development chemist available. Ten years experience in textiles, dyes, finishes, coatings, resins, detergents, emulsions. Capable of setting technical sales work in textile field. Member American Chemical Society, American Institute of Chemists and A.A.T.C.C. Salary $7,000. Write Box 240.

WANTED: Chemical Specialties. Opportunity for a thoroughly experienced salesman with a following to become associated with a fast growing progressive manufacturer. Complete line, including synthetics. Substantial salary and commission. Our staff knows of this ad. Write Box 241.

POSITION WANTED: Chemical Engineer: Five years experience in textile dyeing and synthetic resin field. Desires position in technical service or sales department of New York City firm. Past work included technical service, production, research and development. Write Box 242.

Additional Classifieds On Page XXXIII

REPORTER

CLASSIFIEDS

BRING

RESULTS!

G-4 gives you ...

SAFE MILDEW-PROOFING

Fabrics which come into close contact with the skin for long periods of time can be safely and dependably mildew-proofed with Givaudan's G-4*, efficient fungicidal and antiseptic agent.

G-4's mildew-proofing effect has been proved in use in all types of fabrics. It does not leach out with washing or weathering.

G-4 provides an economical way to fabric improvement—a little goes a long way. And your finishing methods remain unaltered, your fabrics stay soft, pliable, strong—unaffected in color or odor.

Effective mildew-proofing will greatly increase the sales appeal of your fabrics. Write today for full information.

Dihydroxy Dichloro Diphenyl Methane

"BUY WISELY—BUY GIVAUDAN"

Givaudan-Delawanna INC.

Industrial Products Division

330 West 42nd Street, New York 18, N. Y.

IDAHO
Potato Starch
"THE FINEST MADE"

MAGIC VALLEY PROCESSING COMPANY
OF IDAHO

•

ST. ANTHONY STARCH COMPANY, INC.
OF IDAHO

•

MENAN STARCH COMPANY, INC.
OF IDAHO

DISTRIBUTED BY
AMERICAN KEY PRODUCTS, INC.
15 PARK ROW • NEW YORK 7, N. Y.

SYNTHETIC DETERGENTS
ANILINE COLORS
NATURAL DYESTUFFS
SIZINGS and FINISHING MATERIALS

UNITED
CHEMICAL PRODUCTS
CORPORATION

Main Office:
753 MONTGOMERY STREET • JERSEY CITY 6, N. J.
Plant:
YORK AND GOLGATE STREETS • JERSEY CITY 2, N. J.
Branches:
GREENSBORO, N. C. • PAWTUCKET, R. I.
Western Agents: CHEMICAL PRODUCTS CO., AURORA, ILL.

10 PRODUCTS of Proven Dependability

WHICH SHOULD WARRANT ★ YOUR ATTENTION ★

***AQUAROL :** A water repellent for processing woolen, cotton and rayon fabrics, also produces excellent results in splashproofing or finishing all types of hosiery.

***PARAMINE S :** A cation active softener for processing cotton and rayon cloth to obtain a soft, smooth, pleasing finish.

***ALGEPON S :** An assistant in dyeing vat colors to prevent premature oxidation of the reduced bath and eliminate uneven dyeings.

***ALGEPON V A :** Assistant for stripping vat colors—complete reduction of color in stripping bath providing lighter bottom for redyeing.

***PARAPON S A :** A highly efficient leveler and softener for dyeing and finishing all types of yarn, cloth and hosiery to produce a uniform dyeing and a soft full hand.

***ARIPEL F S :** Finish and gas inhibitor for processing dyed acetate rayon—produces a soft full feeling finish and prevents gas fading of the color.

***LANITOL F :** A synthetic detergent possessing exceptional scouring and washing properties for processing wool, cotton, rayon or nylon.

***CULOFIX :** Used as an after treatment in last rinse to prevent bleeding of direct dyed cotton or rayon in water.

***DIAZONOL A C :** For boiling out cotton cloth in pressure or open kiers to produce greater absorbency and cleaner material. Excellent for preboiling knitted cloth in preparation for chlorine bleach. Also used with good results for boiling out cotton or rayon cloth on the jig.

***TETRANOL 1638 :** A rapid wetting and penetrating agent. Active in acid, alkaline and salt solutions and not affected by hard water, may be used in all types of dyeing operations to insure positive penetration of color and a uniform and solid shade.

And a Complete Line of Oils, Chemicals, Softeners and Finishes For Wet Processing All Textile Fibres

*Reg. U.S. Pat. Off.

ARKANSAS CO. Inc.

Newark, New Jersey

ESTABLISHED OVER 40 YEARS

INDEX TO ADVERTISERS

Althouse Chemical Co.	
Amalgamated Chemical Corp.	
American Aniline Products, Inc.	Third Cover
American Cyanamid Co. (Ind. Chm. Div.)	Second Cover
American Dyewood Company	XXVIII
American Key Products, Inc.	XXXI
Arkansas Company, Inc.	XXXII
Atlantic Chemical Co.	
Atlas Electric Devices Co.	XXVIII
Becco Sales Corp.	
Bick & Co., Inc.	
Blickman Co., S.	
Burkart-Schier Chemical Co.	XXXIII
Butterworth Sons Co., H. W.	
Calco Chemical Division American Cyanamid Co.	
Calgon, Inc.	
Campbell & Co., Inc., John	
Carbic Color & Chemical Co., Inc.	XXII
Carbide & Carbon Chemicals Corp.	
Ciba Company, Inc.	III
Colgate-Palmolive-Peet Co.	IV
Commonwealth Color & Chemical Co.	
De Paul Chemical Co., Inc.	XXVII
Dewey & Almy Chemical Co.	XXVI
Drew & Co., E. F.	
Du Pont de Nemours & Co., E. I. Dyestuff Division	
Emery Industries, Inc.	
Fallek Products Co., Inc.	
Fancourt & Co., W. F.	
Geigy Company, Inc.	Front Cover
General Chemical Company	
General Dyestuff Corp.	V
Girdler Corp., The	
Givaudan-Delawanna, Inc.	XXXI
Grinnell Co., Inc	
Hardesty Co., W. C.	
Hart Products Corp.	
Heyden Chemical Corp.	VII
Hooker Electrochemical Co.	VIII
Interchemical Corp., Textile Colors Div.	XIX, XX
International Salt Co., Inc.	
Kali Manufacturing Co.	
Kelco Co.	
Laurel Soap Mfg. Co., Inc.	
Leatex Chemical Co.	
Leeds & Northrup Co.	
Maher Color & Chemical Co.	
Marathon Corp.	
Mathieson Alkali Works, Inc.	
Maywood Chemical Works	XII
Monsanto Chemical Co.	X
Myles Salt Co., Ltd.	XXVI
National Aniline Division, Allied Chemical & Dye Corp.	XIII
National Carbon Co., Inc.	XVII
National Starch Products, Inc.	
Nopco Chemical Co.	VI
Nova Chem. Corp.	XXIX
Nuodex Products Co., Inc.	
Nyanza Color & Chemical Co.	
Onyx Oil & Chemical Co.	XVIII
Oronite Chemical Co.	
Pabst Sales Company	
Perkins & Sons, Inc., B. F.	XVI
Philadelphia Quartz Co.	
Procter & Gamble	
Proctor & Schwartz, Inc.	
Protean Chemical Corp.	XXVII
Refined Products Corp.	IX
Richmond Oil, Soap & Chemical Co., Inc.	XXVII, XXIX
Riggs & Lombard, Inc.	
Rohm & Haas Company	XXXIV
Royce Chemical Co.	Back Cover
Rumford Chemical Works	
Sandoz Chemical Works	XXV
Scholler Bros., Inc.	
Sharples Chemicals, Inc.	
Smith, Drum & Co.	
Socony-Vacuum Oil Co., Inc.	
Solvay Sales Corp.	XV
Sonneborn Sons, Inc., L.	
Standard Brands, Inc.	
Standard Chemical Products, Inc.	
Standard Oil Co. of N. J.	XXIV
Stein Hall & Co., Inc.	
Tennessee Eastman Corp.	XI
Titan Chemical Products, Inc.	
Union Carbide & Carbon Corp.	XVII
United Chemical Prod. Corp.	XXXI
Vanderbilt Co., Inc., R. T.	
Van Vlaanderen Machine Co.	
Virginia Smelting Co.	
Wallerstein Co., Inc.	XXIX
Warwick Chemical Co.	
Watson-Park Company	XXIX
Wolf & Co., Jacques	XXI
Young Aniline Works	
Young Co., J. S.	
Zinsser & Co., Inc.	

PENETRANTS • DETERGENTS • SOFTENERS • REPELLENTS • FINISHES

BURK-SCHIER

BURKART-SCHIER CHEMICAL CO., CHATTANOOGA, TENN.

• CLASSIFIED ADVERTISEMENTS •

The rate for "Position Wanted" advertisements in this column is 2 cents a word—with a minimum of 50 cents per insertion. For all other types of advertisements—i.e., help wanted, machinery or supplies for sale—the rate is $7.50 per column inch or less per insertion.

CONFIDENTIAL EMPLOYMENT SERVICE—For Dyers, Chemists, Colorists, Managers, Superintendents and others seeking positions and for employers seeking men. Many positions paying attractive salaries, open for capable men. Charles P. Raymond Service, Inc., 294 Washington St., Boston, Mass. Over 45 years in business.

WANTED: Graduate Chemist for modern dyehouse in the Metropolitan Area. Must either be a Textile School Graduate or a Chemistry Major with Textile Chemistry experience. Excellent opportunity for the right man. Please state age and salary expected. Write Box 196.

WANTED: Textile Colorist for Modern Print Shop in the Metropolitan Area. Please state age. and salary expected. Write Box 197.

WANTED: Textile Colorist for an established machine printing plant, located in Southern New England. Experience on cottons and rayons, with vats, Rapidogens and Indigosols, necessary. Write Box 230.

WANTED SALES REPRESENTATIVE: Excellent opportunity offered to experienced man with good sales record for New England territory by manufacturer of Textile Chemical Specialties. We offer some outstanding wool products. Write giving full particulars to Box 226.

WANTED: One Butterworth laboratory two bowl padder bowls 3" x 10" face. Monsanto Chemical Company. Everett Station, Boston, 49, Massachusetts.

WANTED: Excellent opportunity for man 25-35 years, technically trained. Knowledge of finishing to sell textile industry in North Carolina and Virginia. Write Box 224.

WANTED: SALESMAN. Excellent opportunity for the right man with leading chemical manufacturer for New England territory. Must have selling experience and personal contacts and preferably chemical or textile mill background. Write complete details to Box 218.

WANTED: Young graduate Textile Chemist for research on surgical quality cotton and gauze. Must be a textile school graduate or have textile experience. Excellent opportunity for the right man. Write Box 219.

THE TEXTILE RESEARCH DEPARTMENT OF THE PROCTER & GAMBLE COMPANY has excellent opportunities for Chemical Engineers and Textile Chemical graduates preferably with 2-5 years textile laboratory or mill experience. These positions consist of research and development work in the Procter & Gamble laboratories and technical work with textile mills. Write Procter & Gamble Co., Employment Dept., M. A. & R. Building, Ivorydale, 17, Ohio.

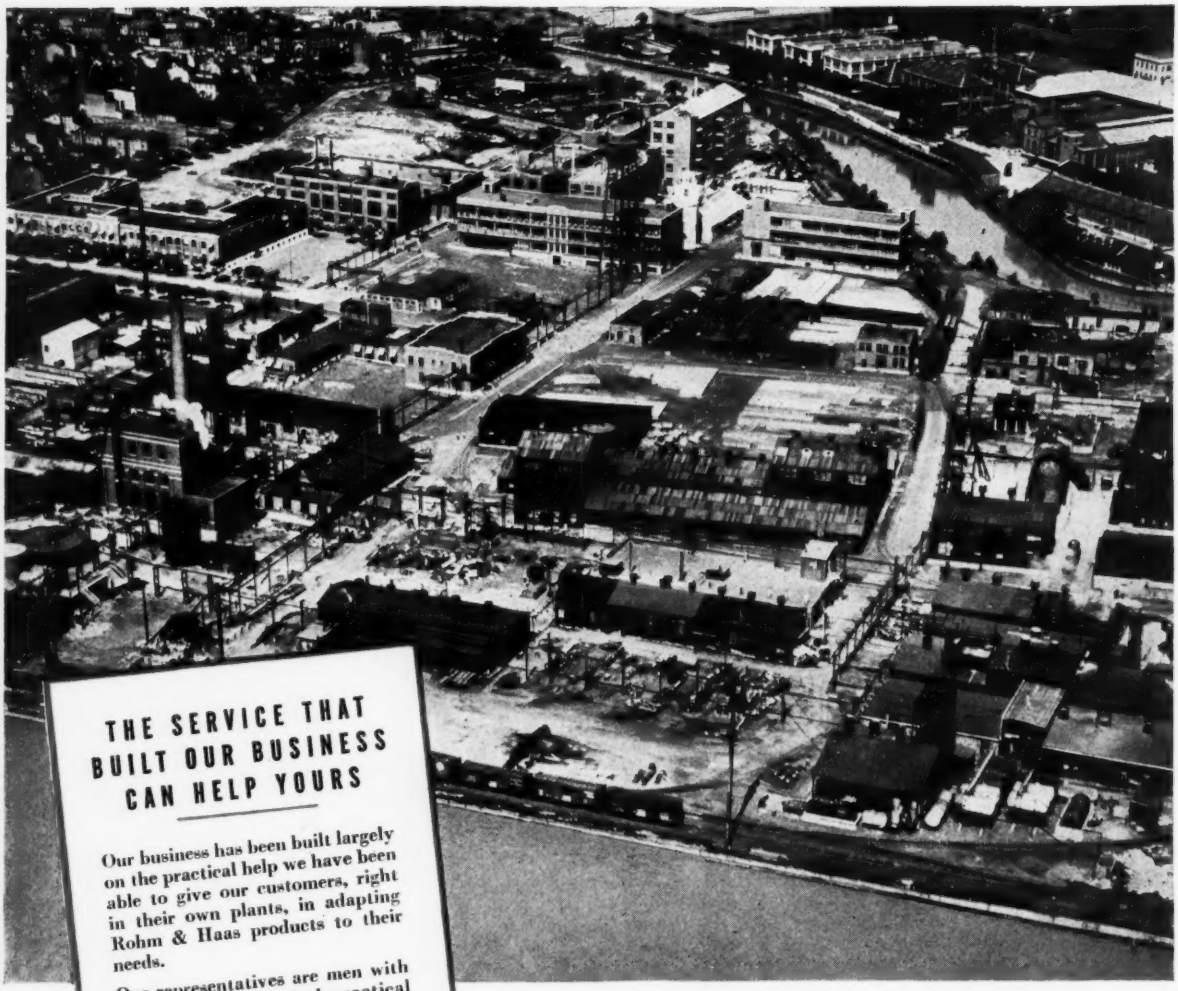
POSITION WANTED: Chemist 26, veteran, completing M.S. degree. 2 years experience product, development and technical service on detergents, wetting agents, textile finishes, emulsions, synthetic organics. Available immediately, New York City area. Write Box 228.

WANTED: Man 25-30 years old, to represent large textile chemical manufacturer in South. Textile School or Technical School education, and two or three years finishing plant experience required. Exceptional opportunity for right man. Write Box 233.

ADDITIONAL CLASSIFIEDS ON PAGE XXX

Where TRITONS and RHONITES are made...

along with other reliable Textile Chemicals



THE SERVICE THAT BUILT OUR BUSINESS CAN HELP YOURS

Our business has been built largely on the practical help we have been able to give our customers, right in their own plants, in adapting Rohm & Haas products to their needs.

Our representatives are men with technical training and practical experience in the use of industrial chemicals. Call in a member of our textile chemicals department when you need assistance in choosing or using . . .

Chemicals For Fine Textiles

TRITONS... Surface active agents for increasing textile wet processing efficiency. A TRITON for every purpose.

RHONITES.. Urea formaldehyde condensates—the first American textile resins offered commercially for crease-resistant fabrics.

TRITON *and* RHONITE *are trade-marks, Reg. U. S. Pat. Off.*

Represented in Canada by Rohm & Haas Company of Canada, Ltd., Toronto; and in South America by Cia. Rohm y Haas, S. R. L., Carlos Pellegrini 331, Buenos Aires, Argentina, and agents in principal South American cities.

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Manufacturers of Chemicals including Plastics • Synthetic Insecticides • Fungicides • Enzymes • Detergents
Germicides • Chemicals for the Leather, Textile, Ceramic, Rubber, Paper, Petroleum and other Industries

Color is our business

To that business we devote our entire research facilities and production capacities. Working hand in hand with textile craftsmen, our staff is ready to create the exact color . . . meet ideal specifications as to fastness properties that any job requires. A.A.P. technicians may be consulted at any of our branch offices.

AMERICAN ANILINE PRODUCTS, INC.

50 UNION SQUARE, NEW YORK, N. Y.

Plant: Lock Haven, Pa.

Branches: Providence, R. I. • Philadelphia, Pa. • Chattanooga, Tenn.
Boston, Mass. • Charlotte, N. C. • Chicago, Ill. • Los Angeles, Cal.
Dominion Anilines & Chemicals Ltd. • Toronto, Can. • Montreal, Can.

DO NOT CIRCULATE

Sales Appeal

with Drytex* NATURAL FINISH water repellent

Drytex has EXTRA qualities worth looking into. DOES NOT FOAM . . . regular, even results, always . . . MORE WAX . . . superior to ordinary wax-emulsion repellents because Drytex deposits more wax around the fibres of the fabric—makes them more impermeable to water.

Drytexed fabrics stay fresher longer—dirt stains and spots are not absorbed. Drytex, correctly applied, has a water repellent rating of 100 by AATCC Standard Test!

Drytex's EXTRA STABILITY saves you money . . . it lasts longer in storage, goes farther in solution. All these EXTRAS and natural looking, natural feeling water repellent fabrics, too. Send for a sample today.

ROYCE CHEMICAL CO.

*Reg. Trade Mark

ROYCE CHEMICAL CO.

CARLTON HILL, NEW JERSEY

MANUFACTURERS OF NEOZYME* • PAROLITE* • DISCOLITE* VELVORAY* • FABRITEX* • GUMOLITE* • CASTROLITE* VATROLITE* • ZIPOLITE*

2445A

2445A